pound. The lack of experience by those who have recently entered upon the cultivation of tobacco is another reason assigned for the difference in price of the product of the two counties. Improvement in these respects, however, is made every year, and there are already twelve packing-houses established in the county. Tobacco is marketed somewhat later than the crop of Lancaster county, and is generally bought by the same packers. The average price of the crop of 1879 was 10 cents, but the range of prices was from 5 to 15 cents, depending on the skill exercised in curing and handling. This crop has increased from 10 to 25 per cent. annually for four years. The varieties planted are the Connecticut Narrow Leaf, the Connecticut Broad Leaf, Hoover Leaf, Brooklyn Leaf, Valley Green, Kill Island, Glessner, and Pennsylvania Seed-Leaf. The sandy soils require more fertilization, but produce a finer type of tobacco. The tobacco grown on limestone lands is inclined to be rank.

The following table shows the production, acreage, yield per acre, and value in primary markets or farmers' hands of the tobacco crop of Pennsylvania from 1876 to 1879, both inclusive, only the figures for 1879 being from the census returns:

Year.	Production.	Acreage.	Yield per acre.	Value in primary markets.	Value per pound.	Value per acre.
	Pounds.		*Pounds.*		*Cents.*	
1876	13,634,744	9,880	1,380	$1,227,126	9.00	$124 20
1877	21,630,000	15,450	1,400	1,946,700	9.00	126 00
1878	23,550,922	19,625	1,200	2,355,092	10.00	120 00
1879	36,943,272	27,566	1,340	4,636,380	12.55	168 19

CHAPTER XV.

CULTURE AND CURING OF TOBACCO IN TENNESSEE.

The cultivation of tobacco in Tennessee began with the settlement of the state. The early pioneers, those who settled in the fertile valleys of the Watauga, Nolachucky, the Holston, and the French Broad rivers, raised it for their own consumption, and those who planted colonies on the Cumberland river during the last two decades of the eighteenth century brought the seed from the tobacco-growing districts of Virginia and North Carolina. Though grown for many years in a small way, it was not until about the year 1810 that tobacco began to form one of the great staples of the state, the comparatively easy access to the seaboard by the Cumberland, the Ohio, and the Mississippi rivers, and the dependence of the population on New Orleans as a market for their surplus productions, soon awakening a general interest all along the Cumberland river in the production of a crop which occupied less room in their small flatboats and keelboats, in proportion to its value, than any other which could be produced. Montgomery and Smith counties, with portions of Sumner, entered vigorously into its cultivation, and by 1820 several thousand hogsheads were annually carried out in flatboats to New Orleans and exchanged for coffee, sugar, salt, and other commodities. The extinguishment of the Indian titles in western Tennessee, and the throwing of a wide domain into market in 1819, added immensely to the available area for the cultivation of the crop. Experience had demonstrated also that the tobacco grown in the state possessed those qualities most sought after in the European markets. Prices were generally low, but the cost of production was scarcely appreciable, as the acreage in other crops was not decreased in consequence of the tobacco crop, requiring, as it did, the largest amount of attention at a time when the other crops required the least, and the rich, fertile soils, freshly cleared, could in no other way be so well prepared for the growth of corn, oats, and wheat as by planting them for a year or two in tobacco. Probably during the decade between 1820 and 1830 the actual cost of growing tobacco did not exceed $1 per 100 pounds. Most farmers owned their labor, and, even when hired, $50 and board was considered a fair average price for good men during the cropping season, which lasted from March 1 to November 1. From 1830 to 1840 the culture of the crop was widely extended. Henry county, in western Tennessee, headed the list, and in 1840 reported a yield of 9,479,065 pounds, 1,212,604 pounds more than any county grows at the present time. Smith county came next, reporting 3,017,012 pounds; and then in regular order came Sumner, 2,615,100 pounds; Montgomery, 2,549,984 pounds; Wilson, 2,313,000 pounds; Robertson, 1,168,833 pounds; Williamson, 1,126,982 pounds; and Rutherford, 1,089,000 pounds. Stewart, Jackson, and Davidson produced, respectively, 993,495, 859,336, and 334,394 pounds.

The prices which prevailed in 1837 were very low, and many planters who shipped their crops to New Orleans during that year were brought in debt for freight and charges. An account of sales of four hogsheads of tobacco in New Orleans in 1837 makes return of the net proceeds as $22 01, or about $5 50 for a hogshead weighing, net, 1,550 pounds, and another account shows that two hogsheads of tobacco netted $7 04, or $3 52 each, scarcely enough to pay for the casks in which the tobacco was pressed. The two years succeeding, however, show a marked increase in price, and from 4 to 10 cents were frequently paid for ordinary crops. The year 1839 is noted for the high prices paid, but in the succeeding year prices again fell very low, good crops bringing from 2 to 5 cents per

pound. In 1841 prices rose, and the crop proved remunerative to the planters. From that period until 1846 prices for good crops, pressed in hogsheads, ranged from 2 to 8 cents. The last-mentioned year was a disastrous one to many dealers, the occurrence of the Mexican war reducing prices to a very low point, from $1 to $3 being generally paid round for crops loose, and planters were glad to dispose of their crops at almost any price. It was not until 1850 that fair prices again prevailed.

About the year 1834 dealers began to put up factories in Clarksville and to purchase loose tobacco. Several establishments for making strips sprang up shortly thereafter, and in 1840 the number of stemmeries had considerably increased. The erection of these stripping establishments gave great animation to this industry, millions of pounds of tobacco being annually brought to Clarksville and prepared for the English trade, and in 1860 there were sixteen of these factories in operation, handling over 2,000,000 pounds of tobacco.

The first effort to establish a market for the sale of tobacco in casks was made in the same place in 1842; but it was a difficult thing to persuade such planters as still adhered to the practice of pressing and shipping their tobacco to New Orleans, influenced also by the agents of the New Orleans houses, to consent to sell in Clarksville. It was not until February, 1845, that warehouses were open for the inspection and sale of tobacco in casks, and from September 1, 1844, to September 1, 1845, there were reported as sold on inspection 900 hogsheads. Encouragement was given to these sales by the merchants and business men of the place, who attended and swelled the list of buyers. Three or four of these warehouses were opened by 1846, and since that period they have been increased, both in size and in number. With the single exception of Louisville, Clarksville opened the first inspection warehouses in the West. A warehouse was opened at Trice's Landing, a point across Red river from Clarksville, in 1847, and at this place the rich product from southern Kentucky was sold, and the sales continued to increase until the opening of the line of railroad to Louisville, in 1860, when a large portion of the production of southern Kentucky found its way to the latter city. The occurrence of the civil war paralyzed the market at New Orleans and Clarksville, and Saint Louis and Louisville swelled into the largest tobacco markets in the West, a position they have maintained to the present time.

Nashville also was a point where some business was done in tobacco as early as 1835. In 1840 the receipts amounted to 4,000 hogsheads, but the hogsheads were then light as compared with those of the present day, and until 1850 they remained about stationary, varying from 4,000 to 5,000 hogsheads annually. About 1850 two tobacco stemmeries were put up, which prepared from 125 to 150 hogsheads of strips and put up leaf for the New Orleans market, the tobacco being bought loose, and being grown principally in Williamson county, with small quantities from Wilson, Maury, and Robertson counties. During the decade between 1850 and 1860 the trade increased considerably, reaching between 7,000 and 8,000 hogsheads annually, the weight of the hogsheads having been increased about 20 per cent, and the handling of the crop being greatly improved through the influence of the local market. Mr. A. Hamilton established the first regular sales warehouse about the year 1851, which stimulated the trade at this point, and the great losses resulting from shipments to New Orleans made the opening of local markets much easier. The sales of tobacco in Nashville closed in 1861, and the receipts were very light, dropping from 7,000 to 500 hogsheads. A great part of it was kept in the country, and during the war dealers from Louisville and from other places bought it up on speculation. The business did not greatly revive until 1872.

In the territory tributary to Nashville the crops of 1878 and 1879 were small. About three-fifths of the total receipts of this market come from the Upper Cumberland River district, one-fifth from western Tennessee, and the remainder from the Clarksville district.

There are at Paris, in Henry county, six tobacco factories, only three of which are in operation. These factories buy annually about 400,000 pounds of tobacco, paying from 3 to 8 cents per pound for fillers and from 10 to 15 cents for wrappers. One hundred and sixty hogsheads of strips, or 208,000 pounds, were put up in the county during the season of 1879–'80.

In Clarksville, while the annual sales of leaf tobacco in hogsheads vary considerably with the success or the partial failure of each crop, there is always a considerable amount sold loose to factories for the manufacture of strips. In 1879 the number of hogsheads of strips was less than for many years. In that year five factories in operation in and around the town reported an aggregate make of strips of 544 hogsheads, weighing 1,250 pounds net, a total of 680,000 pounds. The usual number of hogsheads put up varies from 800 to 2,000.

The following were the shipments from Clarksville—mainly from planters' hands—for eight years, 1873 to 1880, inclusive: 1873, 15,607 hogsheads; 1874, 15,161; 1875, 4,245; 1876, 16,737; 1877, 11,233; 1878, 22,554; 1879, 14,434; 1880, 16,566.

TOPOGRAPHY, GEOLOGY, AND SOILS OF TENNESSEE.

In natural facilities for transportation Tennessee is unsurpassed, the Mississippi river washing the western boundary, and the Cumberland and the Tennessee, with their sources in other states, sweep in concentric curves through the fairest agricultural and mineral districts of the state. The state has eight well-marked topographical divisions:

1. The Unaka mountains, on the east, swelling in great ridge-like masses, some of which attain an elevation of more than 6,000 feet above the sea, upon the summits of which the flora of Canada is found. This division has an area of 2,000 square miles.

2. The valley of eastern Tennessee, lying between the Unaka mountains on the east and the Cumberland mountains on the west, a succession of minor ridges and valleys running northeast and southwest—a great fluted trough, where inequalities of surface, when viewed from the high elevations on either side, melt into a common plain. This valley has an average elevation of 1,000 feet above the sea, and covers an area of 9,200 square miles.

3. Next in order going west is the Cumberland table-land, a high plateau that rises abruptly 1,000 feet from the valley of eastern Tennessee. Its eastern edge presents a formidable, bold, cliff-lined rampart, but its western edge is everywhere jagged in outline, notched and scalloped by deep indentations, and shooting many bold spurs and outlines far out into the western plain at its foot. It is generally higher at its southern termination, and covers 5,100 square miles.

4. Resting against the last division on the east, and extending to the Tennessee river in its reflex course across the state, are the terrace lands, or rim lands, which have an average elevation of 900 feet, the surface, however, tilting toward the northwest, so as to reach a depression of not more than 500 feet above tide-water. This division is a plain, which has been cut and eroded by numberless streams until its once level surface presents generally a highly diversified character. Its area, not including the central limestone basin, is 9,300 square miles, and furnishes by far the most important tobacco district of the state.

5. In the center of the last division, and surrounded by it, is the great limestone central basin of the state, elliptical in form, the major axis running northeast and southwest, and depressed about 300 feet below the rim lands that surround it. This is the garden of Tennessee, comprising an area of 5,450 square miles, and is the center of population, wealth, and influence. It produces every crop grown in the state.

6. The Tennessee river, in its regular course across the state, has hewn out a narrow valley, with spurs from the rim lands at places running down to the river, but sending out subordinate valleys, sometimes 20 or 25 miles in length, before they are lost in the rim lands. The surface is broken and hilly, and marshy spots, often covered by cypress forests, occur at intervals along the river. This valley has an area of 1,200 square miles, and an elevation above the sea of 350 feet.

7. West of the Tennessee river is a great plain, gently undulating, which slopes toward the Mississippi river. No hard rocks appear, except here and there a sandstone bowlder. The streams, cutting through low, muddy banks, wind on their tortuous courses with feeble currents through the district, and find an outlet into the Mississippi with only one or two exceptions—the largest tributary of the Tennessee from the west side being the Big Sandy river. Frequently furrowed with wide river valleys, the plain has an average width of 84 miles, and abruptly terminates in a series of rockless bluffs, that overlook the Mississippi and its lowlands. In superficial extent this division covers 8,850 square miles, with an average elevation of 500 feet above the sea.

8. The last division of the state is confined to the low alluvial bottoms of the Mississippi river. It is often dotted with lakes, marshes, cypress forests, and canebrakes, and, as is usual with the bottoms of the Mississippi, a chain of lakes and marshes lies back from the river a few miles, the best drained soils being those lying upon its immediate banks.

The tobacco area is, for the most part, confined to a belt beginning at the bluffs overlooking the Mississippi river and extending along the northern boundary of the state easterly to a point in Pickett county, 12 miles east of where the Cumberland river first crosses the line between Kentucky and Tennessee. The southern limit of this belt is very irregular. Beginning at the southern boundary of Dyer county, it runs nearly east until it strikes the Benton county line, where it dips to the south for a few miles, inclining northeastward after it crosses the river, so as to include Charlotte, in Dickson county; then on by Ashland City, in Cheatham county, taking in the whole of Robertson and the northern part of Sumner county. Just after passing the eastern limit of Sumner county it turns south, so as to embrace Trousdale county and the northeastern corner of Wilson, and thence through Smith, Putnam, Jackson, Overton, and Clay counties, six or eight miles south and east of the Cumberland river, to the Kentucky line, the whole district embracing about 5,550 square miles. To this may be added the southern and eastern parts of Williamson county and a limited area in eastern Tennessee. Unicoi and Hawkins counties produce the largest crops of tobacco grown in eastern Tennessee, but neither of them reach 100,000 pounds.

It must not be inferred that the soils in the other portions of the state are not suited to the production of tobacco, although it is grown as a staple crop mainly within the limits mentioned, as it can be cultivated profitably in nearly every county in the state, and experiments made on the sandy soils of the Cumberland plateau have shown that even there a fine manufacturing leaf may be produced.

The soils in Obion and Dyer counties adapted to the growth of tobacco are calcareo-siliceous in character, often of an ashen color and consistence, sometimes of a reddish cast, occasionally black, and now and then mulatto-colored. These soils are soft, light, and very loose when first cleared, and contain a large amount of calcareous matter, which occurs in nodules or concretions of carbonate of lime. The subsoil is usually of yellowish clay, the humus is deep, and the arboreal growth dense and large. These soils are very durable, and, when the seasons are favorable, yield larger crops than any others in the state. Three kinds of soils, according to the nomenclature of the farmers, prevail in Dyer and Obion counties, viz, the black, the ash-colored, and the mulatto. The black is deep, with an open subsoil, through which the water percolates rapidly, and is very productive. The native growth is gum, tulip tree, box-elder, elm, linn, cypress, hackberry, and occasionally black oak and walnut. The proportion of this soil is

estimated to be one-sixth, and it is more highly prized for corn, small grain, and the grasses than any other, but some farmers prefer it for tobacco, though tobacco grown upon it is large, coarse, and bony. The ash-colored soil, though lying at a higher elevation than the black, is close, compact, and often water-soaked, the native growth being hornbeam, tupello gum, and pin oak. Properly subsoiled and underdrained, this soil produces herds' grass luxuriantly, and when aerated will grow the cereals well, as well as tobacco of good quality. Usually, however, it is avoided for the growth of tobacco and wheat, because if not well drained tobacco will "french", and wheat will be injured, if not destroyed, by rust. This soil occupies about one-tenth of the area of the two counties. The mulatto land, occupying the highest elevation, is grayish on the top and mulatto below, and prevails to a much larger extent than both of the others. The native growth is tulip tree, white ash, sugar-tree, elm, white and red oak, black gum, black and white walnut, mulberry, honey locust, and coffee-nut, with an undergrowth of papaw, red-bud, dogwood, and sometimes hazel-nut. This, for all purposes, is regarded as the most valuable soil in the two counties under consideration. It occupies a rolling surface, which rises sometimes into hills 100 feet high, in the western part of the counties of Dyer and Obion. By a large majority of farmers this soil is preferred for tobacco, wheat, and cotton. The mulatto soil pulverizes more finely than the black, does not become so wet or so dry, and forms the bulk of the farming lands in the two counties. The black occupies a more level surface, and, it is said, will stand more constant cropping than the ash-colored, and does not wash, in consequence of the level surface upon which it rests. The tobacco of Obion and Dyer counties is noted for its large size, wide leaves, uniform brown color, and fitness for making strips.

In Weakley county the soils vary greatly in productive capacity, the western portion of the county being generally fertile and the timber large. The principal growth is black oak, interspersed with white oak, post oak, hickory, black gum, ash, and dogwood, with but few tulip trees. In other places the tulip tree predominates, associated with white oak, sweet gum, hickory, post oak, black gum, and dogwood. The lands presenting the best growth are generally level, are of a mulatto color, sometimes dark brown, and are especially adapted to the growth of corn, tobacco, and wheat. The soils east of Dresden are called "the barrens", and are divided into "hickory barrens", on which the hickory tree predominates, interspersed with dogwood and black gum; "black-jack barrens," which have a thin soil; and "post-oak and hickory barrens", in which the soil is intermediate in character between the two previously mentioned. All the "barren" lands are well adapted to the production of a fine quality of tobacco. The soil, composed mostly of decayed vegetable matter, is incumbent on a red clay, beneath which is a reddish sand, and when properly cared for is of great durability. The best tobacco lands in Weakley county lie between the northern and middle forks of the Obion river, and include about 170 square miles. Three classes of soils are recognized by the farmers as suited to tobacco: the tulip-tree lands, the black-jack lands, and the bottom lands. The first makes a very leafy tobacco, that cures a brown and piebald color, and makes a wrapper suitable for navy or common plug. The tobacco grown on old black-jack lands usually cures up a dark brown, sometimes of a yellowish piebald color. The brown makes a good German shipper, and the bright tobacco is mainly used in the manufacture of plug. Tobacco grown on freshly cleared black-jack lands always cures up a bright color, and the leaf is oily, compact, elastic, and of small fiber; that grown upon bottom lands is large, coarse, dark in color, very porous, and is only suited for making strips for the English market.

In the barrens the black-jack is dying out and the red oak is taking its place. The black-jack is fed upon the top-dressing of potash left by the annual fires, and in every state in which inquiries have been instituted it grows with vigor upon suitable soils, only where fires annually consume the dead grasses, and it dwindles into feeble vitality as these conflagrations grow less frequent, it having long been known that no tree of the forest is richer in potash, and the failure of this food soon produces decay and death.

The same character of barren soil, characterized by the same forest growth, prevails in the northern part of Carroll county, where tobacco is grown. On Givens' creek the soil is of singular excellence, the timber growth being tulip tree, red oak, white oak, beech, black gum, sweet gum, hackberry, and catalpa. This is a favorite soil for the growth of tobacco, making an article with all the fineness of fiber of the black-jack lands and all the leafiness of the tulip-tree lands. On the low ridges bounding the streams black-jack, post oak, and chestnut abound, and the soil is of the same general character as that in the barrens of Weakley county, and is well adapted to the growth of tobacco. It is a black, sandy loam, with a deep red clay subsoil, which, however, is sometimes sandy. The bottom lands were once boggy, but during the past twenty-five years they have been filled up by the washings from the adjacent hills, and partake of the same general character as the hillside soils, but are more durable, and produce excellent tobacco. On the road leading from Huntingdon to Paris there is a sandy soil, resembling that which prevails in the northern part of Henry county, upon which some of the finest yellow tobacco of the West is grown.

In Benton county black-jack and post-oak soils prevail in the southwest, where are found limestone and sandstone. These are the first hard rocks *in situ* met with in going east. The soils in the northern part of the county are dark in color, with a reddish subsoil, and are characterized by a growth of the tulip tree, white oak, hickory, and red oak. In the eastern part of the county many high cherty ridges prevail, and the soil has a large amount of angular cherty gravel in its composition, being very much like the soils of Montgomery and adjoining counties, hereafter described.

The geological formations of Henry county will indicate the character of the soils. All that part of the county

lying west of a line drawn north and south through Paris, the county-seat, belongs to the La Grange sands of the Tertiary. In this part of the county the soils are mellow and siliceous, loamy, working kindly, but very easily washed, and are very much of the same character as those already described as lying in the eastern part of Weakley county. They are excellent for tobacco, wheat, and cotton. The subsoil is reddish in color, and inclined to be sandy, rather than clayey. A belt lying parallel with this, on the east, belongs to the flatwoods of the Tertiary, in which there are local accumulations of white clay, which make the soil in places wet, and scarcely arable without drainage. Then comes a belt, six miles wide, known as the Ripley sands of the Cretaceous formation, and the soil of this belt is very kind and productive. Many of the hills are capped by a ferruginous sandstone, which is generally disintegrated into a friable, easily-cultivated soil. This soil, with the formations already mentioned, is mainly great strata of sands and laminated clays, covered with a thick bed of humus. The remains of the drift formation, or, as locally called, orange sand, are found over all this portion of the county. The eastern line of this belt marks the termination of the more recent formations of western Tennessee. Between this and the Tennessee river is a ridge, considerably elevated, known as Tennessee ridge, which divides the waters of the Tennessee from those of the Mississippi. Here appear the Upper Silurian rocks, and the character of the soil changes altogether, sandy and clayey accumulations giving place to cherty hills, and the soil, though fertile, is filled with masses of angular gravel. Some of the sub-Carboniferous rocks also appear. East of the ridge the surface soon becomes level or gently rolling, and is underlaid with red clay, more or less intermingled with gravel. The timber growth of the county is much diversified, elm, ash, beech, maple, locust, mulberry, hornbeam, dogwood, white oak, post oak, and red oak being found in great abundance, some white oaks being 6 feet in diameter. Several varieties of soil are recognized, among others a gray, gravelly soil; a stiff, red, clayey soil; a black loam with clayey subsoil; a red loam, clayey or sandy, and a grayish sandy loam, the last and the first being preferred for growing the yellow tobacco, the second and third for shipping tobacco, and the red sandy loam for a light manufacturing leaf. The soil in the northern part of the county is noted for its capacity for growing the finest yellow tobacco raised in the state, and in all the other parts of the county a large leafy tobacco is grown, which is used largely for making strips for the European markets.

Passing now across the Tennessee river, we enter upon a group of counties which, in geological and topographical features and in the character of the soil, very much resemble each other. These counties are Humphreys, Dickson, Houston, Stewart, Cheatham, Montgomery, Robertson, the northern part of Sumner, Macon, Clay, and a part of Jackson. They all belong to that division of the state known as the rim lands, and are referred to the sub-Carboniferous formation. The soils of these counties, though similar, may be divided into several sub-varieties: 1. Calcareo-siliceous soils; 2. Barren soils; 3. White clayey soils; and 4. Alluvial soils.

The calcareo-siliceous soils occupy nearly all the northern part of Stewart county, a part of Dickson and Cheatham, and nearly the whole of Montgomery and Robertson counties, the northern part of Sumner, a part of Macon, and nearly all of Clay county. It forms the soil of what is known as the Lithostrotion bed, and is composed for the most part of variable proportions of humus, commingled with silica, alumina, and carbonate of lime, the quantity of oxide of iron being so large that it gives a deep red color to the subsoil. After being brought into cultivation, the dark loam of the surface, by being intermingled with the red subsoil, changes to a chocolate color. Stiffer than other calcareous soils, it is not so liable to wash when the surface is moderately broken, having generally underlying it cherty beds, which alternate with beds of clay and supply a natural drainage. In wet weather these beds take off the superfluous moisture, and in dry weather the thick beds of tenacious clay beneath supply moisture to the growing crops. The soil is strong and durable, and never fails to produce fair crops when well cultivated, whether the seasons be wet or dry. The surface of the country is usually broken, and hopper-shaped sink-holes and wide, circular, pond-like depressions are nearly everywhere met with; not so frequently, however, as seriously to impair the value of the land for cultivation. The characteristic timber is red oak, black-jack, hickory, tulip tree, white oak, and, near the streams, walnut, black gum, ash, elm, sycamore, and beech. This soil has long been recognized as the very best in the state for tobacco, the quality grown upon it being fine, yet rich and oily, resembling the softness and pliancy of a kid glove, and for years it stood at the head of all classes of export tobacco. Outside of the counties under consideration and a few lying contiguous in Kentucky this peculiar type of tobacco is grown nowhere else in the Mississippi valley. For many years it was a great favorite in the market; but the recent change in the taste of consumers has diminished its popularity and restricted its use. Clarksville, the center of this district, was long famous in the tobacco marts of the world.

The second character of soil in this group of counties is light in color, with a porous, yellowish clayey subsoil, in which a large amount of whitish chert is intermingled. It is usually fine grained and infertile; nevertheless, when first cleared, it produces tobacco which, though small, is very fine.

This white clayey soil is interspersed without any regularity, a considerable body being found in the eastern part of Stewart county, the northern part of Cheatham, the southeastern part of Montgomery, the southern part of Robertson, and a large portion of Macon. This soil is close, compact, water-soaked, difficult to till, and is characterized by the growth of sweet gum and water oaks. The surface is usually a dead level, and wherever elevations occur within the boundaries of such places the soil is open and productive, but it lacks drainage, and is deficient in humus. In a few places, where well drained, it has been known to produce a fine type of tobacco.

Some of the alluvial soils, when well drained, grow a very fine type of tobacco, especially the lowlands on Dry creek, in Stewart county; on Red river, in Montgomery and Robertson counties; and on Buzzard creek, Sulphur fork, and Miller's creek, in the last-mentioned county. Generally, however, the rich uplands in all the counties under consideration are preferred for tobacco.

The remaining counties in the tobacco belt of the state, viz, Trousdale, Wilson, Smith, and the river basins of Jackson and Clay, have a rich calcareous soil, derived from the crumbling down of the limestones belonging to the Cincinnati group of the Lower Silurian formation. This soil is dark-brown in color, very loose, and very fertile; has often intermingled with it limestone gravel, and sometimes chert; is generally thirsty, and will not stand a drought as well as the calcareo-siliceous soils of the rim lands. Nevertheless, if the season is sufficiently wet, it will yield larger crops than any other soil in middle Tennessee. The subsoil is pale yellow, and is inclined to be porous. The surface is generally broken into large, mound-like protuberances, which, though fertile to the top, are liable to be denuded of their soil by heavy rain-storms. Though employed for the production of tobacco, this soil does not usually produce a fine leaf, being large but bony, with thin web and large fibers, lacks oil, and when cured often resembles a lifeless oak leaf. This region is admirably suited to the growth of blue-grass and to the breeding and raising of cattle.

It only remains to note the character of the soil that prevails in two detached areas in the state in which tobacco is grown for market, viz: A part of Williamson county, and a portion of Unicoi and other counties in eastern Tennessee. The soil of Williamson county is of the same character as that last described, and needs no further mention, while that in Unicoi is a micaceous, sandy soil, often clayey, and varies greatly with the formation. Where the dolomite limestones in eastern Tennessee form the foundation rock the soil is highly calcareous and magnesian in its character, and sometimes a chert, which is associated with the dolomite, preponderates. The soil then is thin and inclined to be gravelly or sandy. Sandstones belonging to the Potsdam age also abound, and the soil derived from its disintegration is very infertile. In the coves a commingling frequently of all these constituents gives a very loose, mellow, and productive soil. The soils in the metamorphic areas are generally good, being derived from the gneiss and trap rocks of the district. These soils very much resemble those about Asheville, North Carolina, where a considerable amount of fine yellow tobacco is grown; and the recent culture of tobacco in Unicoi county has been stimulated by the prices paid for the tobacco grown in the adjoining counties of North Carolina, with which its tobacco culture is identical.

CLIMATE.

Tennessee has a climate neither very wet nor very dry. The heat is not extreme in summer, nor is the cold in winter so intense as to interfere with the ordinary occupations of its inhabitants. The average degree of cold in winter is indicated by the limit of domestic ice-houses, which would be a line east and west through the center of the state. North of this line it rarely happens that the cold of winter is not severe enough to make a bountiful supply of ice, while south of it the ice seasons are so infrequent that it is not considered profitable to construct ice-houses, and in all the tobacco-growing districts of the state the winter frosts are sufficient to ameliorate the soil. Along the median line which marks the southern limit of ice-houses the mean temperature of the year is about 57° in the valley of eastern Tennessee, 58° in middle, and 59° in western Tennessee, a range, in traversing the state from east to west, of 3°, partly due to elevation. Along the southern boundary of the state the annual mean is about 1° higher than on the corresponding longitude of the middle parallel, while on the northern boundary it will be found as much lower, thus giving an approximate range from south to north of 3°, especially in the valley of eastern Tennessee.

From observations made by the Signal Service at Knoxville, extending from January 1, 1871, to October 31, 1880, the mean spring temperature is 57°.4; summer 75°.2; autumn, 56°.8; winter, 39°.6. The greatest difference between the lowest and the highest temperature recorded in any one year was 109°. The highest recorded temperature was 100°, and the lowest —14°. The prevailing winds were from the southwest. The mean annual precipitation for the same period was 53.54 inches.

In Memphis the period of observation extended from February 28, 1871, to October 31, 1880, and the mean annual temperature of spring was 61°.4; summer, 79°.4; autumn, 60°.2; winter, 42°.7. Extreme range of the thermometer any one year, 97°; highest recorded temperature, 101°.5; lowest, —2°; mean annual precipitation, 53.98 inches; prevailing winds, southwest.

Near Clarksville, Professor William M. Stewart made meteorological observations for the Smithsonian Institution for nearly a quarter of a century. From these observations it appears that January is the coldest month, the mean for that month being 34°.08; then December, 38°.54; February, 41°; November, 46°.45; March, 47°.30; October, 57°.17; April, 57°.84; May, 64°.98; September, 69°; June, 72°.14; August, 74°.85; July, 76°.22, being the hottest month in the year. The number of days between killing frosts varied within this period from 173 to 228, the average being 189. The mean of the rainfall for twenty-one years was 45.712 inches, the lowest being 33.8, and the highest 60 inches. Within this period the thermometer did not reach a higher point than 99°, and the lowest was —8°.

TOBACCO DISTRICTS OF TENNESSEE.

Tennessee has three well-defined tobacco districts, as recognized by the trade, each producing types more or less distinct:

1. West Tennessee tobacco district.
2. Clarksville tobacco district.
3. Upper Cumberland River tobacco district.

THE WEST TENNESSEE DISTRICT.

This district embraces all the tobacco-growing area lying between the Mississippi river on the west and the Tennessee river on the east. This region is well adapted to the growth of cotton, fluctuating in cultivation between that staple and tobacco. When cotton is high and tobacco low a comparatively small amount of tobacco is grown, and when tobacco is high and cotton is low the acreage of the latter crop is largely decreased. When both staples bear good prices, it is no uncommon sight to see large fields of both cotton and tobacco on the same farm.

VARIETIES OF TOBACCO PLANTED.

A large number of varieties of the tobacco-plant are grown in western Tennessee, prominent among them being the White Stem, Orinoco, Yellow Pryor, Blue Pryor, Kentucky Bull Face, One Sucker, Little Yellow, Nimblewill, Thickset, Sleek Stem, Twistbud, and many others with local names.

The White Stem has a long, narrow leaf, which cures up with good body and of a dark-brown color usually, but the stem is very large and out of proportion to the leaf. It is probably not identical with the White Stem of Virginia, which has weeping leaves. The leaf is of bad shape for wrappers, but is not ruffled about the base of the stem. The Orinoco grows better on thin soils than the other varieties, ripens about two weeks earlier than the Yellow Pryor, and is preferred by many on account of its peculiar sweetness. The Yellow Pryor will stand on the hill longer, resisting field-fire, and will ripen more perfectly than any other variety planted in western Tennessee. The Blue Pryor is probably more extensively cultivated in Weakley county than in any other. It breaks but little in handling, and resembles very much the Yellow Pryor, but makes more pounds to the acre. The Kentucky Bull Face is very valuable for making strips. The One Sucker is the "lazy man's pride", because its vitality is so feeble that it sends out only one crop of suckers after being topped. It has, however, a very long, narrow leaf, coarse in texture, and is suited for scarcely any purposes of manufacturing. This variety sunburns easily when cut, and when growing every leaf extends downward until it touches the ground, making "luggy" tails, the only redeeming quality being its weight and usually large yield. It is called by some Lizard-tail. Little Yellow makes a nice wrapper. It has a well-shaped leaf, drooping from the top and widening for about one-third of its length, and then gradually coming to a wide, well-rounded point. Grown upon suitable soils, it cures up a bright yellow, which commands a high price; but when planted upon a rich, clayey loam, it develops a rich, heavy shipping tobacco. Nimblewill has a leaf of the same shape as the White Stem, but is coarser in texture, and is not popular. The Twistbud, so named from the habit which the plant has of developing a screw-shaped bud with the terminal leaves twisted, has narrow leaves, growing close together, and is chiefly commended for its hardiness and its disposition to grow very heavy. The Thickset is but little cultivated. The Sleek Stem makes a valuable "shipper". The Yellow Pryor, Blue Pryor, Little Yellow, Orinoco, and Sleek Stem are generally preferred, some in one county and some in another. The tendency is now largely toward the White Burley.

SOILS PREFERRED FOR TOBACCO.

It is universally true throughout western Tennessee that rich upland soils with a clayey subsoil will produce a leaf much finer in texture than the alluvial soils, and with much better body, but not so large. When the same variety of tobacco is planted upon these different soils the quality differs so materially that it can rarely be used for the same purposes. The following will approximate the proportions of grades for the several counties in western Tennessee:

Counties.	Bright wrappers.	Dark shipping.	Fillers.	Nondescript.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
Dyer	.....	50	25	25
Obion	.....	50	30	20
Weakley	.....	50	20	30
Benton	.....	50	.....	50
Henry, northern part	20	5	50	25
Henry, western part	40	30	20	10
Henry, eastern and southern parts	5	30	10	55

The improvement during the past decade has been very marked in Henry county, the proportion of bright wrapper having been greatly increased, owing to the local demand of manufacturers; and while there has been a disposition on the part of farmers living in the southern and eastern parts of the county to curtail production, the disposition among those living in the northern and western portions has been equally as pronounced in extending the cultivation. Tobacco for domestic consumption pays a handsome profit, but raising tobacco for export scarcely pays expenses. In the northern and western sections tobacco suited for domestic manufacture can be grown, but in the southern and eastern portions only a heavy export tobacco for the most part is raised. In Dyer, Obion, Weakley, and Benton counties, where heavy tobacco only is made, the tendency toward diminished production is apparent. In these counties there has been no improvement in the quality for ten years or more.

Tobacco in western Tennessee, on freshly-cleared lands, is not so rich or oily, or of such good body, as on old lands, but is larger and brighter in color and finer in texture, the finer qualities being produced upon rolling lands. It is estimated that fully one-third of the crop planted each year is upon newly-cleared lands. For the production of the finer grades the soils should be well drained and not too rich.

FERTILIZATION AND ROTATION OF TOBACCO.

The returns show that in a few localities, as in Benton county, 50 per cent. of the old lands planted in tobacco are well treated with stable manure, one correspondent being of the opinion that three-fourths of the area planted has an application of from one to one and a half tons of stable manure per acre, at a cost of $10. This is an exception, however, to the general practice, for in Dyer county one-fourth only of the area cultivated is fertilized and in Obion county not 10 per cent.; in Henry county, from 1 per cent. on the Tennessee river to 50 per cent. in the northern and western portions. In Weakley county not 5 per cent. of the tobacco area is fertilized, and but a very small quantity of manure is hauled out, only such fertilizers as accumulate about the barnyards being generally carried out in the spring and scattered upon the old lands intended for tobacco, and sometimes manure is put into the hills. Newly cleared lands are never manured. All concur in the statement that the yield, even on good lands, will be increased 20 per cent. and the quality improved in weight and body by manuring.

In the more westerly counties three successive crops of tobacco can be taken from freshly-cleared soils without any apparent diminution in their fertility; but in Henry, Benton, and Carroll, and the eastern parts of Weakley, soil deterioration progresses at the rate of 20 per cent. per annum in the absence of fertilizers, except on rich bottom lands, which may be cultivated for many years without any perceptible decrease in yield.

In Henry county clover and stock pease are largely used to renovate such lands as have been impoverished by the cultivation of tobacco. In Benton county also stock pease, turned under when green, have proved to be very effective in reclaiming the soil. In the more westerly counties the general rotation is tobacco, wheat, and clover, and this is kept up indefinitely on tobacco lands.

The following statement shows the production, acreage, yield per acre, value of crops in farmers' hands or in primary markets, value per pound, and the value per acre of the tobacco crops of western Tennessee for the years 1876 to 1879, inclusive, only the figures for 1879 being from census returns:

Year.	Production.	Acreage.	Yield per acre.	Value of crop in farmers' hands.	Value per pound.	Value per acre.
	Pounds.		*Pounds.*		*Cents.*	
1876.....	13,837,150	18,955	730.00	$809,414	6.50	$47 45
1877.....	9,505,210	13,294	715.00	570,312	6.00	42 90
1878.....	9,535,240	13,330	715.00	476,762	5.00	35 75
1879.....	7,655,346	10,666	717.73	401,140	5.24	37 61

These estimates will all show larger crops than are reported in the commercial transactions of the country, because a considerable part of the product is retained at home for domestic consumption. In that portion of this district producing tobacco as a staple, embracing the six counties of Benton, Carroll, Dyer, Henry, Obion, and Weakley, the product of 1879 was 7,294,411 pounds, grown upon 9,781 acres, an average of 746 pounds per acre, and the remaining fourteen counties during the same year produced 360,935 pounds on 885 acres, an average of 408 pounds. A very small portion of this product, which is grown upon small patches, ever finds its way even to primary markets.

CLARKSVILLE DISTRICT.

This district comprises Montgomery, Robertson, Cheatham, Humphreys, Dickson, Houston, and Stewart counties, in Tennessee, and several adjoining counties in Kentucky, which are described in the chapter on Kentucky. It was the well-deserved fame of the Clarksville leaf which first induced European buyers to leave the seaboard for the interior.

The acreage of tobacco in the district in 1879 was about 10 per cent. greater than in 1878, but 30 per cent. less than in 1877 and 50 per cent. greater than in 1876. The yield per acre in the census year was about equal to that of 1878, 15 per cent. less than in 1877, and 20 per cent. greater than in 1876, and the quality of the crop of 1879 was 10 per cent. better than in 1878, 10 per cent. worse than in 1877, and 5 per cent. better than in 1876.

VARIETIES OF TOBACCO GROWN.

The varieties of tobacco planted are numerous, and correspond closely to those in the Kentucky part of the district, most prominent among them being the Orinoco, Yellow Pryor, Blue Pryor, Yellow Mammoth, and Morrow.[1] The Yellow Mammoth, when grown upon rich soils, is inclined to be coarse and harsh, but when planted on the thin whitish soils which prevail in some portions of the district it makes a very fine Swiss wrapper. This variety has a large, broad leaf, and stands long on the hill after it is fully ripe, becoming more yellow and better up to the time of cutting. The tobacco of this district, under the name of "Clarksville Leaf", is tough and strong, large, fine fibered, silky and oily, is of a blackish brown or chestnut color, retaining well its strength and elasticity after passing through the sweat, making it specially useful for cigar and spinning purposes, and is consumed mainly in Germany, Austria, Switzerland, England, Italy, and France, as indicated in the description of the part of the Clarksville district lying in Kentucky. There are many variations of this standard raised in various portions of the district having a general likeness, and too distinct from any other growth of the West to be classed as anything else than "Clarksville".

The African leaf, which goes to the Guinea coast, is used in a singular way. The negroes dip the bundles into a pot of boiling lard and then hang them up to drip and dry, and the leaf is then made into huge cigars, a foot or more long. A circle is then made, the cigar passed from hand to hand, and the smoke swallowed, until, one by one, the smokers fall back insensible from tobacco drunkenness.

SOILS ADAPTED TO THE GROWTH OF TOBACCO IN THE CLARKSVILLE DISTRICT.

On heavy clay soils, long cleared and heavily manured, the tobacco leaf is very thick, heavy, and fatty, and cures up a dark or blackish-brown color. Grown on thin land and poor ridges, the tobacco is light and thin. A slight admixture of sand and gravel in the soil is no disadvantage, but when in excess the plant blisters in the hot sun before it ripens and the product is much damaged. A soil with an excess of vegetable matter produces an overgrown, coarse article, and the tobacco ripens too rapidly to insure the requisite amount of gum. For this reason alluvial lands on the streams are not so well adapted to its growth as uplands, where the soil, though thin, is fertile. Some of the finest tobacco grown in the Clarksville district is raised upon soils not three inches deep, where the prevailing timber is black-jack and hickory. When grown upon such soils it has a fine, smooth, silky texture, small stem and fibers, and a lively, rich brown color, and is very elastic, oily, and soft. Rich, heavy shipping leaf may be grown upon river and creek bottoms when well drained, and when the alluvial deposits have not an excess of vegetable matter. The best tobacco lands in the district, or rather those which grow the quality which has given character to the region, are characterized by a brownish loam, resting upon a deep red subsoil, and underneath the latter a stratum of chert, which, alternating with clayey beds, rests finally upon limestone at a greater or less depth. Such a soil as this is made warmer in the spring by the excellent drainage induced by the cherty beds, and is kept cool in summer by the constant but gradual evaporation from the underlying clay. Three good effects result from the peculiar physical condition of the soil: 1. The earth being warm in spring, the plants get an early start. 2. The plants are guarded against the blistering heats of the sun by the coolness produced by evaporation. 3. The plants stand long on the hill, ripening, thickening, mellowing, and secreting the gums and oils that have given to this tobacco a world-wide character.

The subsoil of these best tobacco lands is remarkable for its tenacity, unctuousness, and peculiar red color, due to the presence of oxide of iron. In the early settlement of the state these lands were called "barrens", because they were destitute of timber, and it was the universal custom of the aborigines and early settlers to burn off the dead grass from these lands annually. In this way a large amount of potash, so necessary to the growth of the tobacco-plant, was accumulated in the soil. The presence of this constituent gave rise to harsh forests of black-jacks, with a bark thick enough to resist the heat of the fires, and following these came the scrub hickory, which was known to the early settlers as "grub hickory", so named because a sprout an inch in diameter often has a root 6 or 8 inches through. As soon as fires were interdicted hazle bushes, dogwood, and black gum shot up, and what was once a wide expanse of prairie or open woods became a tangled mass of thick underbrush, above which towered the black-jack, oak, and hickory. In the course of years the black-jack gave place, in large part, to red oak in swales and on rich hillsides, and to post oak on rocky hills. The lands here described are *par excellence* the tobacco lands of the Clarksville district.

Wild cherry, black walnut, tulip tree, ash, and beech, with an undergrowth of dogwood, papaw, and blackberry bushes, are indications of a most desirable soil for the growth of the cereals and grasses, but it is not suitable for

tobacco, which would acquire its growth too rapidly and begin to waste early. Such a soil will grow large, leafy tobacco, and sometimes it will be very showy in its brilliant colors after being cured, but it will be wanting in quality.

When tobacco is planted upon freshly-cleared land, it grows off rapidly and matures early; but when cured, it is apt to be light, thin, and is usually of a mahogany or piebald color. For chewing tobacco it is preferred, because it is milder and sweeter. Grown upon land gently undulating or level, tobacco is heavier-bodied than when grown upon hilly lands. All the wooded lands of the district, except where too rough for cultivation, as near the margins of streams and where a few marshy areas occur, are well adapted to its production, and it is estimated that about one-tenth of the area planted now is freshly cleared, though this proportion has been gradually reduced since the first settlement of the country. At one time it was the general practice to plant at least half the crop on newly cleared lands and the other half on lands cleared the year before, but the growing scarcity of timber has made farmers resort more and more to well-manured lots. The usual rotation is tobacco, wheat, and clover one or two years, and then tobacco again, and this is kept up, on what are called tobacco lots, for many years. Some few alternate corn with tobacco every third or fourth year, but this is by no means general. Usually, when lands are once planted in corn, the rotation becomes corn, oats or wheat, and clover one or two years. Those farmers who practice the biennial rotation with clover keep their lands in a high state of productiveness. With clover one year in the rotation, the land requires to be supplemented by liberal applications of manures to retain its productive capacity. About 60 per cent. of the area cultivated in tobacco is fertilized with barnyard manures and commercial fertilizers, the latter being usually applied to the hill, about 200 pounds being required for one acre. The barnyard manures are used according to domestic supply, some farmers making every effort to increase the quantity, while others are totally indifferent. Leached ashes are an excellent manure for tobacco, and are carefully saved after soap-making and applied broadcast, or in the hills. Ground raw bone has also been experimented with, but without satisfactory results, and Patapsco guano, though used only to a limited extent, has proved an efficient manure for the tobacco-plant. The science of manuring to increase, as well as to preserve, fertility is but little understood, however, by the great majority of the farmers of the district, the idea being to apply only enough to meet barely the requirements of the crop to be grown. In the past thirty years the average yield of all crops per acre has been largely decreased, and it is a rare thing at the present day to harvest over 1,000 pounds of tobacco to the acre planted, while within the memory of planters yet in the vigor of manhood a product of 1,500 pounds per acre was by no means uncommon. It may be safely stated, however, that were the application of fertilizers increased the yield would be augmented from 10 to 60 per cent., according to management and season. When land is freshly cleared, the crop improves on good soil for the first three years, but the fourth year, without manuring, would probably show a depreciation of about 30 per cent. This rapid decline in fertility is owing, probably, as much to the surface configuration of the district as to the partial exhaustion of the soil. In all the Lithostrotion bed of the Lower Carboniferous formation there are underground caverns or streams, and in very many places the surface above these caverns or streams drops down, forming within a short time hopper-shaped sink-holes. Sometimes these drops determine the contour of the surface around for one or two hundred yards. When these slopes are continuously cultivated for a number of years a great quantity of surface soil is swept from the surrounding rims to the bottom of the sinks, reducing very rapidly the producing capacity of the slopes without adding to the fruitfulness of the bottoms. Indeed, the bottoms of these wide sinks are very uncertain for the production of crops, as after heavy rains the water is liable to stand sufficiently long to kill out any crop that may be planted. Great skill and care are required in the management of these lands to preserve their fertility. In large areas of the Clarksville tobacco district, however, the surface is comparatively level, and in these the lands are easily preserved.

The grades of tobacco grown in this district vary somewhat with seasons, but in an average good crop the following proportions are about correct: Dark shipping, 40 per cent.; fillers for European cigars, 30 per cent.; bright wrappers, 5 per cent.; nondescript, 25 per cent.; cutting (American), none.

There has been no special change in the proportion of grades for many years; but, in the main, the crop has depreciated in good qualities and dark colors, brought about by careless cultivation and inattention to the details of curing and handling, the deterioration, as compared with the crop twenty years ago, being probably 30 per cent. in dark, fat German tobacco, the production of this grade being in much smaller proportion than formerly.

The following is the statement of production, acreage, yield per acre, value of crop in farmers' hands or in primary markets, value per pound, and value per acre of the tobacco crop of the Clarksville district for the years 1876, 1877, 1878, and 1879, only the figures for 1879 being from census returns:

Year.	Production.	Acreage.	Yield per acre.	Value in primary markets.	Value per pound.	Value per acre.
	Pounds.		*Pounds.*		*Cents.*	
1876.....	8,981,700	15,275	588.00	$673,627	7.5	$44 10
1877.....	27,111,042	32,664	830.00	1,762,217	6.5	53 95
1878.....	14,788,590	22,051	670.00	813,372	5.5	36 85
1879.....	16,157,954	22,012	705.22	888,687	5.5	38 79

UPPER CUMBERLAND RIVER DISTRICT.

This district comprises the northern part of Sumner, the northern and eastern parts of Wilson, all of Smith, Trousdale, Macon, Clay, Jackson, and Putnam, and a small part of Overton county.

In the western part of Sumner county the tobacco is of a finer texture than that grown in the eastern part, and closely approximates the Clarksville type. In portions of Macon and Wilson counties the type produced is of a much higher character than the general product of the district, and would, with the same care and attention, closely approximate the best types of the Clarksville district. This finer quality of tobacco is grown on the hills and uplands, where the soil is much of the same character as that of the uplands of Montgomery county, that grown on bottom lands, and where the Cincinnati limestone crops out, being coarse in texture, more porous, and deficient in gum.

Sumner and Trousdale counties report a decrease in acreage in 1879, as compared with 1878, of from 5 to 20 per cent. in different localities, and from 30 to 50 per cent. as compared with 1876 and 1877. In all the other counties of this district the decrease was about in the same proportion. The estimate for the whole district is that the production of 1879 was 5 per cent. less than that of 1878, 33 per cent. less than in 1877, and 20 per cent. less than in 1876. The quality of the crop of 1879, with the exception of some injury by mold after curing, was much better than that of the two crops preceding, and equally as good as that of 1876.

VARIETIES OF TOBACCO CULTIVATED.

The varieties most cultivated are the Lovelady, the Shoestring, Big Hester, Little Hester, Yellow Pryor, White Stem, and Zollicoffer. The Big Hester has a large, heavy leaf, stands wet or dry weather well, is not so subject to disease as other varieties, and cures a fine bright color when properly managed. The White Stem is the same as that known under that name in western Tennessee, but does not tally with the description of the White Stem of Virginia. The Lovelady is a very popular variety, grows well, has a medium leaf, is easily handled, cures up a beautiful color, and produces great weight to the acre, but is not desirable for export. The Zollicoffer is large, but subject to spot, and is preferred for the African market, being very long. The Hester and the Lovelady make good wrappers, as also a fine shipping leaf. Twistbud and Orinoco are also grown in Jackson county. New land will make a light chaffy article, very much like the Burley, often used for a cutting leaf. It is used principally for smokers. Old lands produce heavy, dark tobacco, and beech lands are preferred for growing the finest grades. Where the soil is thin, the Lovelady is the best variety to plant, as upon such soils it will attain a greater size and make a better quality than any of the other varieties. In Trousdale county the southwestern slopes of the hills are preferred for growing fine tobacco, while the northern slopes grow a coarse article, very much like that produced on the flat lands.

With the exception of Sumner, Wilson, Trousdale, Smith, Putnam, and Overton counties, it may be said that three-fourths of the tobacco in this district is raised on creek and river bottoms, on rich, loamy alluvial soils, the plant in consequence growing very large, and the texture being rough and coarse. It is very spongy, and has the capacity of absorbing and holding large quantities of water, the large stem, however, with the consequent heavy loss in weight when it is taken out, depriving it in a large degree of its usefulness for the manufacture of strips. The tobacco grown in Putnam and Overton counties is planted principally on uplands, which have a thin soil, grows small, is generally of an inferior character, and is taken mostly for the Spanish market. Some fine tobacco is occasionally grown on hickory land. A portion of the product of these counties is also grown on creek bottoms, the soil and the product being of the same character as that heretofore described. Wilson county now produces the best tobacco grown in the district. It is cured more thoroughly, the stem and fibers are not so large, and it is taken for purposes for which the tobacco of the other counties cannot be used, as, for instance, an occasional crop suited for Germany or Italy, and now and then a crop suited for plug work and for manufacturing wrappers. The crop of this district generally is suited for export on the Regie contracts of France and Spain, which countries pay the lowest prices for tobacco, a small quantity being taken as fillers for the manufacture of plug tobacco, and not an inconsiderable portion for the African market through Boston.

As a general rule, the district is poorly provided with barns for the curing of the crop, most of it being air-cured in log or rail pens, exposed to the beating rains. Some improvement in this respect has been made within a year or two, yet the truth must be confessed that in no other portion of the United States is tobacco handled more roughly, or less pains taken in its preparation for market. Since the establishment of sale warehouses in Nashville, to which point a large proportion of the tobacco of this district finds its way, a free intercourse between planters and buyers has resulted in a more earnest effort to improve, not only the quality of the tobacco grown, but the methods of curing and handling. Already in some of the counties on the upper Cumberland in Kentucky the White Burley has been introduced, and promises to make a good cutting leaf for domestic manufacture. The Morrow tobacco, on good uplands, topped to ten or twelve leaves, frequently makes an excellent cutting leaf. On good bottom lands most of the varieties named will yield an average of one thousand pounds to the acre.

The tobacco grown in this district may be divided into the following grades: Dark shipping, 25 per cent.; fillers, 20 per cent.; bright wrappers and smokers, 15 per cent.; cutting, 5 per cent.; nondescript, 35 per cent.

Ten years ago there was very little effort made to cure tobacco of bright colors, the only sorts raised being large, dark, heavy grades, for export, and size and weight constituting the sole aim of the planter; but since a demand has sprung up for a better quality a few farmers here and there are very successful with the tobacco grown on uplands and second bottoms. The low prices which have prevailed have also caused many to abandon its cultivation altogether. The idea is gradually being received that this whole region is well adapted to the production of a type of tobacco suited to domestic consumption.

The following statement shows the production, acreage, yield per acre, value in farmers' hands or primary markets, value per pound, and value per acre of the tobacco crop of the Upper Cumberland River district for the years 1876, 1877, 1878, and 1879, only the figures for 1879 being from the census returns:

Year.	Production.	Acreage.	Yield per acre.	Value in primary markets.	Value per pound.	Value per acre.
	Pounds.		*Pounds.*		*Cents.*	
1876.....	5,614,826	7,447	758.00	$366,913	6.50	$49.27
1877.....	6,809,148	9,308	731.00	306,411	4.50	32.89
1878.....	4,829,685	6,571	735.00	217,335	4.50	33.07
1879.....	4,576,452	5,885	777.65	217,381	4.75	36.94

PREPARATION OF TOBACCO SOIL AND PLANTING.

Old lands, whenever it is possible, are broken with a turn-plow in the fall, not close but deep, 8 to 10 inches not being unusual, the object in not plowing closely being to leave the land in ridges during the winter, so as to expose as large a surface as possible. In February, if the soil be too thin, the land is cross-plowed with care, in order that too much clay may not be brought to the surface and the best soil be buried too deep beneath it. It is thought to be the better plan at the second plowing to turn only a shallow furrow and follow with a subsoil plow; but the latter implement is rarely used. If not subsoil, the furrow slices are cut very narrow, so that the plow does not reverse them, but leaves them on edge or turned but half-way over.

If it is the purpose of the farmer to plant tobacco upon a clover sod, it is very important to break it in midsummer or early in the fall, and again as early after New Year as the condition of the land will permit. This has the effect of destroying the cut-worms, which are always numerous upon clover lands. Dead grass, plowed under in the late fall or midwinter without time to rot thoroughly before spring, is a serious disadvantage to the tobacco crop.

If the plowing is deferred until the advent of freezing weather, more fruitful results will follow if the grass is burned off. It is not only better for the soil, but the larvæ of the cut-worm, and of other insects injurious to tobacco, are destroyed. About the 1st of May all the stable manure, leached ashes, scrapings from stock yards, and manures from hog pens and other places are scattered over the land, and are plowed in immediately to the depth of three or four inches. After the expiration of a week or two, when the manure has had sufficient time to become incorporated with the soil, the land is well harrowed and laid off into rows, generally 42 inches wide. Upon this two furrows are thrown with a turning-plow drawn by one horse, and then crossed with furrows the same distance apart. This leaves the ridges in broken hills, the tops of which are cut off with a hoe and patted, when they are ready for the reception of the plants.

If the farmer should wish to apply fertilizers to the hill, no ridges are made; but the land is laid off both ways, and the manure is placed at the points where the furrows intersect one another. Upon the manure thus applied a small hill is made with the hoe.

While 3½ feet apart each way is the usual distance of setting the plants, the distances are greatly varied in different localities, in western Tennessee, where the tobacco grows very large, 3 feet by 4 being preferred, as the wider distance will allow passing between the rows with less danger of breaking the leaves. On thin soils the rows are often laid off 3 by 3 feet; others prefer 3 feet 3 inches by 3 feet 3 inches; and a few set out the plants 3½ by 2½ feet. On the strong bottom lands of the upper Cumberland the rows are frequently laid off 3 by 4 feet. The practice of manuring tobacco in the hill is heartily condemned by many good farmers, because in very dry weather the tobacco is more subject to field-fire; but in a wet season the results are often very satisfactory, the object of manuring in the hill being to make a small quantity of manure go as far as possible. Commercial fertilizers, at the rate of about 200 pounds to the acre, are always applied in the hill.

An excellent manure for tobacco is made by composting leached ashes with well-rotted stable manure. When placed in a heap this mass soon decomposes, and is in excellent condition for putting in the hill.

The method of preparing the soils, as given, is applicable only to those that are loose and mellow; and the land should be plowed and replowed and frequently harrowed until it is brought to this condition, it being the generally received opinion among farmers that a thorough preparation of the soil is equal in its effects upon the crop as all its subsequent cultivation.

TRANSPLANTING TOBACCO.

When the lower leaves of the plants are as broad as three fingers they are of sufficient size for transplanting, this being usually done immediately after a rain. A gentle rain, in which the water is soaked into the earth as fast as it falls, is much preferred. The transplanting should not be done while the ground is wet enough to be compacted by pressure against the roots, for this gives a check to the plant in its new situation. The plants are carefully drawn, one at a time, and placed straight, with the heads all in one direction. After this is finished they are picked up and laid straight in baskets or in a wagon-bed and taken to the field. Transplanting is done by means of a wooden peg, 6 inches long and an inch and a half thick, gradually sloped at one end to a point, and a good man may set out 5,000 plants in a day, though to set 3,000 properly is considered a fair day's work. An acre, when the rows are 3½ feet apart each way, will contain 3,555 hills, so that two acres, with one person to drop plants for every two engaged in setting, may be considered a satisfactory day's work for three hands, including the drawing of plants.

The manner of transplanting is this: A dropper, with a basket of convenient size filled with plants, takes two rows, dropping a plant on each hill. Two transplanters follow, each with an extra plant in his hand, called a "hand-plant". With the peg described he makes a hole in the center of the hill, two or three inches deep, depending upon the size and length of the plant. The roots are thrust into this hole to the bottom, and a gentle pressure is made downward upon one side of the plant, while the dirt on the other side is supported by the fingers of the left hand. The plant dropped upon this hill is picked up and carried to the next, and while passing from one hill to the other the person transplanting has time to adjust it in his hand ready for setting. The use of the "hand-plant" greatly facilitates the work. When the supervening weather turns off dry and hot, many plants will perish, and to prevent this it is the practice among some farmers to put lumps of dirt, either upon the plant or on the southern side of it, in order to screen it from the blasting rays of the sun. This is very troublesome, and rarely pays for the time and labor expended. Others draw the dirt up closely to the leaves of the plant, so that the bud, enfolded in the leaves, will be just beneath the surface of the soil. This is found to be much more effective and less troublesome.

The usual period of planting tobacco is from the 20th of May until the 10th of June, though very often a considerable quantity is planted during the first week in May and as late as the 4th of July; but it rarely happens that a good crop is made when the plants are set out later than the 15th or 20th of June. Some plants are always destroyed in the field, either by cut-worms, grasshoppers, or dry weather. The replanting is carried on as late as the middle of July. The eagerness among planters to have their crops planted at as early a day as possible induces many to set out plants before they are large enough.

CULTIVATION OF THE TOBACCO CROP.

The cultivation of tobacco among the best farmers is continuous, no sprig of grass being permitted to interfere with its growth. As soon as the plants have become well rooted, it is the practice with many farmers to run a turning-plow, drawn by one horse, twice between the rows, with the bar next to the plants. This wraps up all the grass in the center of the row, and leaves the plants standing on a narrow ridge. Hoes are then brought into requisition, and all the grass is scraped away from the plants and a little fresh dirt is put about them. In a week thereafter a cross-plowing is given in the same way, followed again with the hoes, and in about four weeks after the plants have been set a third plowing is given, this time the mold-board being turned toward the plants, the dirt thrown up about them, and the "middles" split out. With many farmers this ends the cultivation, while others will use the plow once or twice more, always throwing the dirt to the plants after they are large enough.

Within a few years past cultivators have been largely used in working the crop. These are run through the rows every week for five or six weeks, the hoes following, when necessary, to cut out any grass or weeds that may not have been reached by the cultivator.

Just before the third plowing, when the plants have attained a height of eight or ten inches, three or four of the lower leaves next the ground are generally plucked off, in order that the dirt may be thrown against the stalk and wrap up any grass that may have come up in proximity to the plant. Some excellent farmers, however, maintain that the tobacco-plant is greatly injured by this operation, and that if the lower leaves are permitted to remain the plant will be much healthier, the crop heavier, and there will be a smaller proportion of lugs, the two lower leaves acting as a protection for the others against the spattering of mud in rainy weather. The object in throwing the dirt to the plant is to give it such lateral support that it will not be readily blown down by the winds. It was once a very common practice, after the last plowing, to go over the field with hoes and make a large broad hill about the plant. These hills give the appearance of a higher and more careful culture, and may have the effect of preserving the ends of a few of the larger leaves which would otherwise rest upon the top of the ridge made by the plow, but the saving in this particular will scarcely compensate for the increased labor, and it is by no means improbable that the plants may suffer more from drought by breaking the continuity of the ridge into separate hills; at all events, the practice has been well-nigh discontinued. In cultivating tobacco farmers avoid working the land when it is too wet. Clayey soil worked when wet will bake, and the injury done the crop is vastly more than the presence of grass can effect. Even upon sandy soil no good results follow.

TOPPING, WORMING, AND SUCKERING TOBACCO.

In from six to seven weeks, during a favorable season, the "button", or blossom-bud, begins to peer out above the topmost leaves, when it should be topped. The usual method of topping is, after "priming", so as to leave the stalk bare six inches above the surface of the ground, to pinch out the top, leaving usually ten leaves, more rarely twelve, and sometimes but eight. The almost universal custom once was to leave from twelve to sixteen leaves on each plant; but experience has demonstrated that the maximum yield, and a better quality, can be obtained by leaving fewer leaves. For a long time ten leaves were believed to produce the highest results, but recent experiments have favored the idea that the highest production may be reached by leaving only eight leaves to the plant. As the season advances the number of leaves is decreased, and the general practice is to have every plant in the field topped by the 1st of September, even though it be so small that it will furnish only four leaves. The first topping, when the crop has been set out in May, will usually occur about the 4th of July, and every week thereafter the field is gone over until the whole is topped.

An important experiment was made in Montgomery county to test the difference between topping to eight leaves and topping to a higher number, and while one such experiment is not conclusive, it accords fully with the convictions of the most intelligent growers of the county. The land selected was a highland basin, in which the soil was a dark brown loam, with a few nodules of chert intermingled. The subsoil was a ferruginous clay, unctuous and highly retentive of moisture, though well drained by the underlying beds of chert. The land had been in cultivation for half a century, and was well preserved. Two lots of four acres each were selected, both receiving applications of stable manure. No. 1 was set out, 3½ feet each way, in the latter part of May, was well cultivated, and the tobacco topped to eight leaves. No. 2 was set out about the same time at the same distance apart, and was cultivated in all particulars like No. 1, and topped to ten leaves. The tobacco on No. 1 ripened first, but was permitted to stand fully two weeks after it was apparently ready for the knife. It was not cut, however, until the tobacco on No. 2 was well ripened, and both pieces were housed about the same time. Hot fires were employed in the curing of both. The tobacco grown on No. 1 was a long, rich, black wrapper, very oily and elastic, fully 30 inches in length, and very heavy; that grown on No. 2 was lighter in color, but poorer in quality, and was deficient in gum and elasticity. A prominent New York dealer called at the barn after both lots had been stripped and packed down, preparatory to pressing, and offered 17 cents for that grown on No. 1, but only 12 cents for that grown on No. 2. But this was not all. Lot No. 1 yielded 1,200 pounds, and lot No. 2 only 900 pounds per acre. The tobacco grown on lot No. 1 was far less expensive in suckering and stripping, for the number of suckers was less, and the number of leaves to be stripped from the stalk was one-fifth less, as compared with No. 2. The entire gain, considering the saving in labor, the difference in price, the excess in weight of the tobacco grown on No. 1 over No. 2, was fully 50 per cent. There was no apparent cause for the difference, except that the tobacco on one lot was topped to eight leaves and allowed to stand a considerable time after it was ripe, and on the other topped to ten leaves and cut as soon as it was thought to be mature.

Generally about two weeks before the plants are large enough to top the worms begin to make their appearance in sufficient numbers to demand attention, and from this time until it is harvested the war against them is continued.

There are usually two heavy "showers" of worms, the first coming on just before the period of topping, and the second about the middle of August, or rather during the time of full moon in that month. The last influx of worms is the most destructive and the one most dreaded by the farmers, because it comes at a time when the suckers are troublesome, and they furnish a hiding-place for many worms which are thrown on the ground with the suckers, and, not being destroyed, crawl up on the plant and are unmolested in their depredations until the planter has another opportunity to go over his crop.

In the experience of the most observant planters, if the first influx or "shower" of worms is diligently destroyed the second brood is much lessened, for it is believed that the moths, the mothers of the second brood, come from the first worms. In some years the number is astonishingly great, as many as one hundred worms having been taken from a single plant during its period of growth. Such a large number, however, is exceptional. They are thought to be very numerous when there is one to the leaf, but generally there are from two to three to the plant. If the previous summer and autumn have been dry, with the ground hard, very few worms may be expected; but if the previous season has been a wet one, followed by a mild winter, they are apt to prove very troublesome. When the worms are in excess, there is no time for idleness with the planters. All the extra help which can be secured is employed, it being often the case that a good, active man is not able to keep one acre well wormed. Early and late, through bad weather and good, a constant warfare is waged against these insects, and neglect or inattention at this time may so depreciate the crop that it will be unfit for any except the lowest grades. Taking a number of years in succession, three acres have been found to be about equal to the ability of one man to keep properly free from worms, upon which basis crops are arranged. The worms appear in great numbers about one year in five.

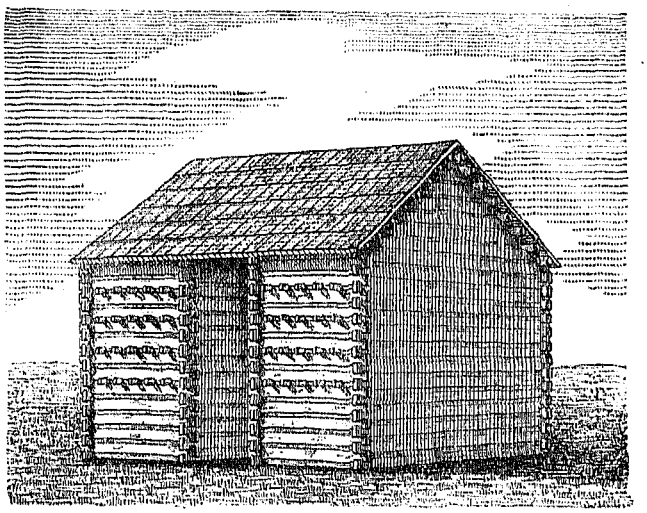
Various schemes have been devised to destroy the tobacco moth. One enterprising tobacco firm in Clarksville a few years ago offered a premium of $50 in gold to the boy who should kill the greatest number of flies. This aroused exertion among the lads throughout the counties of that district, and many thousand moths were destroyed.

The poisoned artificial Jamestown-weed bloom, described in chapter XXI, has been favorably tried, and in very rare cases reliance is placed upon droves of turkeys for suppressing the horn-worms; but the safest and surest means for the destruction of this great enemy of the tobacco-plant is in the employment of a sufficient number of good, steady, trustworthy hands. When as many as five hands are engaged in the work, it is found profitable for the employer or his manager to follow behind them and catch what worms they may leave. This active supervision will insure the attention of each laborer, and a rivalry springs up as to which one shall leave the smallest number. Suckers, as a usual thing, are pulled off at least once a week, and cease to be troublesome after they have been broken off twice from the same place.

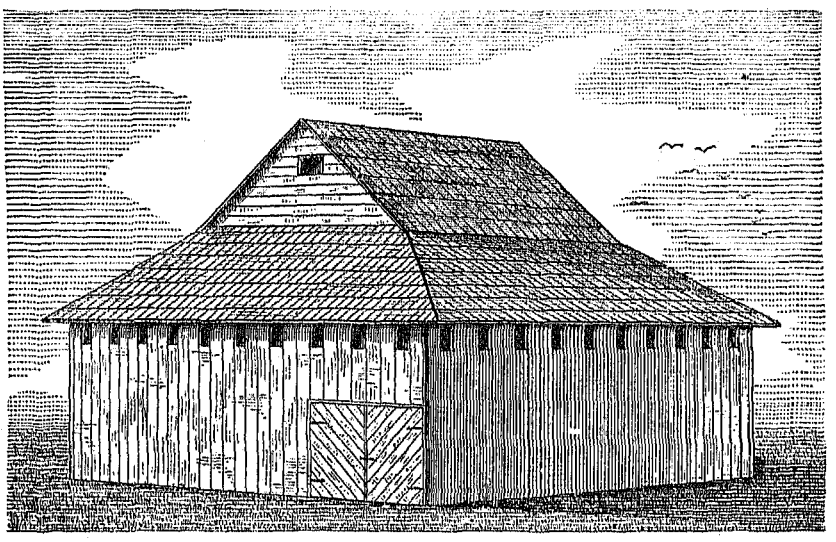
As the plants ripen they become more brittle, and greater care is necessary to prevent breaking the leaves in passing through worming and suckering. The worming process also becomes more difficult, for in raising the leaves to look for worms on the under surfaces they are apt to break off. At this stage winds often invert half of the leaf, folding it over on the other half. Such leaves should be carefully turned back, as the heat of the sun soon impairs their value by blistering or burning the under surfaces.

TOBACCO-HOUSES.

In the early history of tobacco culture in the state the tobacco-houses were simply pens, built with rough logs. Afterward an improvement was made by hewing the logs on two sides, so as to have an evenness of surface on both the outside and the inside. As good, straight building logs became scarce and dear, frame barns were substituted; yet at the present day fully three-fourths of the barns in the state are built of logs, and there are many excellent farmers who prefer them for curing tobacco. They are usually built from 20 to 24 feet square and four or five firing-tiers in height. Two of these pens are sometimes built so as to leave a passage between, as in the illustration. Others are shedded around with hip rafters, so as to have three firing-tiers in the shed. The shed is usually constructed from 12 to 15 feet wide. Such a barn (see engraving) has the capacity of housing and curing 10,000 pounds of tobacco.



Sometimes, when more curing space is needed, a room is added to each end of the log barn, 10 or 15 feet in length, the walls of the same height as the log pens, the roof being continuous; and side sheds are added, if desired. Such an addition, while no more expensive, is more easily constructed, and is much more roomy than hip-rafter sheds built on the four sides of an ordinary barn.

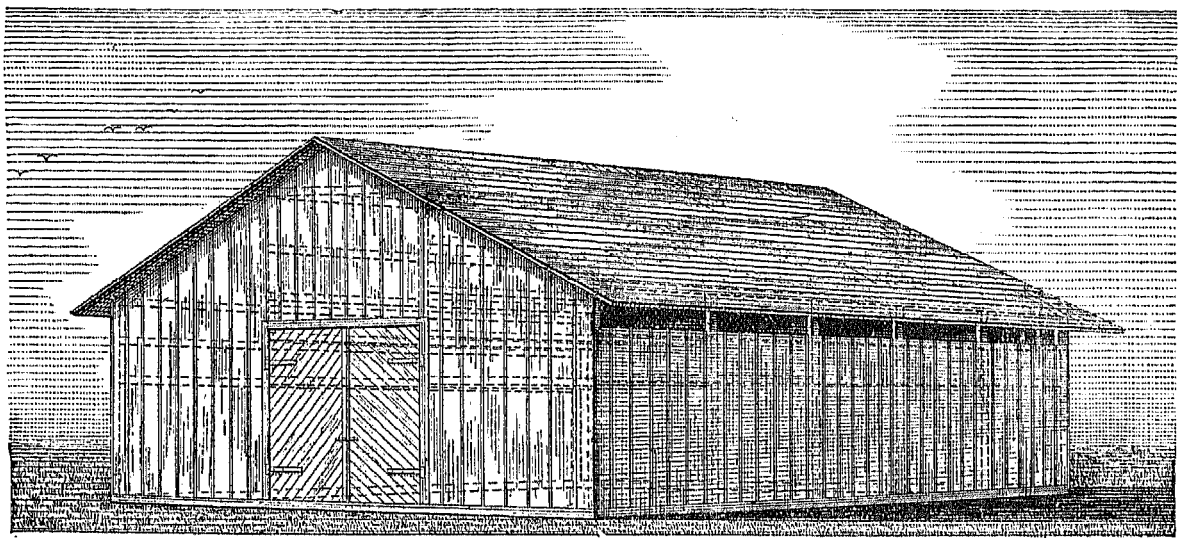


In building a log barn, the pen is raised to the height of about 9 feet, when a set of tier poles, 4 feet apart, is put across and notched down. About every 3 feet in height thereafter another set is put in, until the barn is raised as high as is desired. Two or more sets of tiers are framed on the rafters, giving additional room in the roof. A barn five tiers high in the body and 20 feet square on the inside will hold 1,000 sticks, each stick containing 7 plants, or will house and cure two acres of tobacco.

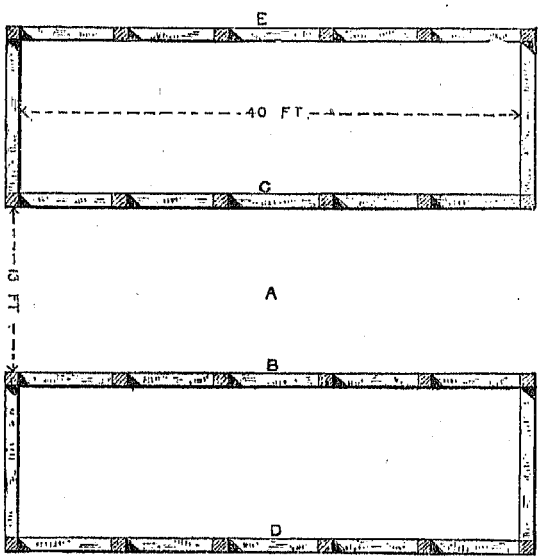
Frame barns are constructed in a variety of ways. The diagrams on page 182 will serve to show the details in the construction of a frame barn 40 feet square, with a capacity of holding seven acres of well-grown tobacco.

A represents a wagon-way 13 feet wide, the posts on each side of which are framed into sills. The posts on each side, on the lines marked B and C, are 21 feet high, capped with a stout plate 4 by 6 inches. At the height of 9 feet from the sills the first set of streamers is let in the posts, parallel with the passage, and three other sets above these, 3 feet apart, which, with the plates 3 feet above the last set, make fine foundations for tier poles put at right angles and extending over the passage-way. These tier poles are put 4 feet apart, every alternate one

resting against the posts on each side. The posts in the lines marked D and E are 15 feet high, with two sets of girders or streamers let in from the outside, the first set 9 feet from the ground sill, so as to be on a level with the

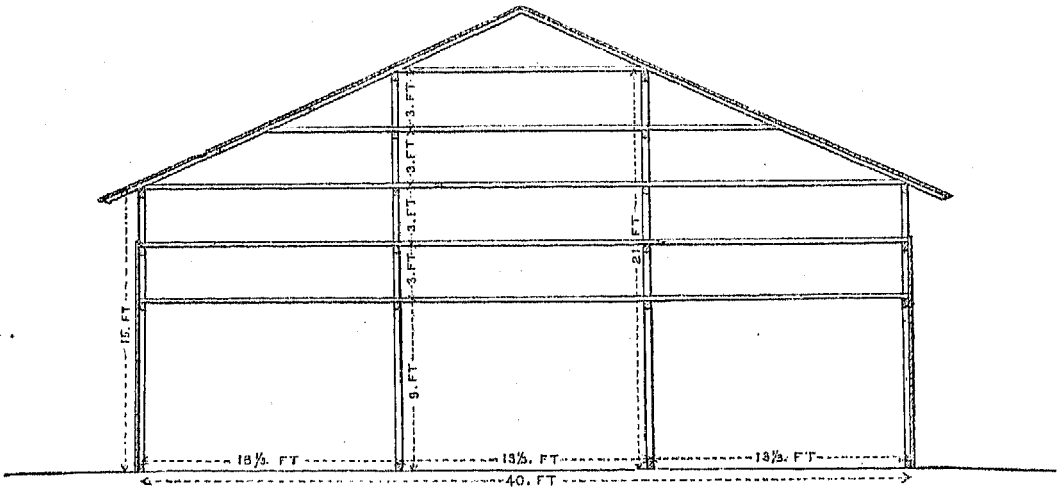


first set in the passage-way. A plate rests on top of the posts, 3 feet above the last set of girders. Tier poles extend from the girders on the outside posts to the girders on the central line of posts. The accompanying section will give a better idea than a written description, the cross-pieces representing tier poles, the girders supposed to be perpendicular to the plane of the paper.



The pitch of the roof will be 6-feet fall in 13½ feet. Some tobacco-barns are provided with ventilators on top, though rarely. Windows at the gable ends and under the eaves answer a good purpose as ventilators, and they may be opened and shut as the requirements of the process of curing demand. The boards or planks for inclosing the barn may be a foot or more in width. They are set perpendicularly and nailed to the sills, girders, and plates. A barn like this need not cost over $250, with the help which could be furnished from the farm in its construction.

When the tobacco in the field is fully ripe, it should be cut immediately, or it will waste rapidly. When there is an insufficiency of barn room the cured tobacco has to be crowded. In this crowded condition the stems, which are rarely cured up entirely, often rot, and not only is the leaf near the stem injured, but every leaf which touches the rotting stem is damaged. House-burned tobacco is, in fact, nothing more than tobacco that has rotted for want of air. In crowded houses, where the fires are kept in such low condition as to induce an accumulation of moisture or "sweat" on the leaves, there is always more or less house-burned tobacco. Such tobacco is lifeless, is of a dark-brown color, breaks easily, and seldom comes in case for stripping.



The only furniture needed in a curing barn is plenty of good sticks, rived from hickory or oak, 4 feet 6 inches long by 1½ inches wide and 1¼ inches thick. Thoughtful farmers always have these well-seasoned before they are used. Green sticks are apt to sag under the strong heat required for curing tobacco.

In portions of western Tennessee, notably in Henry county, the schedules returned to this office mention flues as among the means used for curing tobacco. These are especially valuable

in curing the bright tobacco, but Dr. R. G. Tuck, who first introduced flues for the curing of tobacco in Virginia, and subsequently removed to the Clarksville tobacco district, was of opinion that they were not well adapted to curing the rich, heavy leaf of that district, and therefore abandoned their use. A few, however, are used in Montgomery county and in some of the counties of the Upper Cumberland River district. They are by no means common, however, in any portion of the state.

Almost every extensive planter, in addition to his curing barns, has a stripping barn and a "prizing" room, where the tobacco is pressed in hogsheads.

CUTTING AND HARVESTING THE TOBACCO CROP.

There has been little change in the method of cutting and housing since tobacco began to be cultivated in the state, the class of laborers employed not adapting themselves readily to new plans.

In the state of Tennessee the tobacco harvest usually begins about the 10th of September and lasts until the first week in October. Occasionally crops are cut earlier, and sometimes later. Generally, with favorable weather, about six weeks intervene between topping and cutting. By that time the leaves droop, become thick, and assume a yellowish mottled color. When the upper surface of the leaves is carefully examined, it has an oily, granulated appearance, and when examined through a magnifying glass semi-globular excrescences are thickly distributed, with depressions between them. The leaves also become more rigid, breaking easily. These are indications of maturity. Cut in this condition, the tobacco-plant, when cured, will reach its maximum in weight and quality; but if the cutting be deferred a few days, rusty spots will begin to appear on the leaves, and the quality is rapidly impaired. It rarely happens that all the plants in a field will ripen at the same time. To do this there must be a remarkable homogeneity in the soil and a uniformity of surface exposure, and all the plants must be topped about the same time. Newly-cleared land will ripen the plants several days earlier than old land originally of the same character, and in general, whatever hastens the growth, whether a southern exposure, a rocky soil, which catches and retains the heat of the sun, stimulating manures, or a dark soil, is calculated to bring the plant to an early development and maturity. It is not considered best, however, for tobacco to mature too rapidly. In such a case it will be comparatively deficient in the oils and gums that give it strength and flavor.

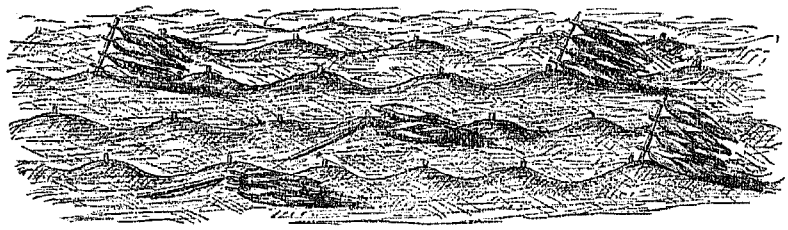
Generally the first cutting will take about half the plants in a field, and these are carefully selected, leaving the unripe ones. If the number of green plants be inconsiderable, say not more than an eighth of the whole, it is thought by the best planters to be profitable to cut the whole, as the time lost in going over a considerable field to gather up a few plants will cost more than the difference between the matured and immatured plants is worth. As the season advances and dangers from frosts are feared, planters are always disposed to cut a field clean, for a green plant is greatly preferred to a frost-bitten one. When cut late, the custom is to bring the plants together and stack them in what is known as "frost piles", and this must be done when the plants are cool; for if put in such piles, when warmed by the sun the plants will "coddle" or scald from the heat generated. These frost piles are made by setting the plants bottom side uppermost in a round pile, the leaves resting on the ground and the butts sticking upward. When put into such piles properly, it will become of a bright golden color in three or four days, when it may be strung upon sticks and carried immediately to the curing barn. As a general rule, however, it is better, in the heavy styles of shipping tobacco, to allow the plants to stand a little too long than to cut them when green, because thoroughly ripe tobacco is much heavier and sweeter. The leaf usually attains its full size in three or four weeks after being topped. After this it thickens and becomes fat, under the combined influence of copious cool dews and hot suns. There is as much difference between the fragrance of ripe and that of green tobacco, after being cured, as between the taste of a rich, ripe, luscious peach and that of a green one.

Three or four days, if possible, are allowed to intervene between heavy rains and the next cutting, for during this time the gums washed by rains are secreted in as large quantity as ever. Nor is it the practice to cut tobacco when a shower of rain is imminent, for if caught in a rain it will be bespattered with dirt and sand, which detract largely from its value. Should the rain continue for a day or more after the plants are cut, the tobacco absorbs the moisture and gets in a "strut", in which condition it cannot be handled without great breakage. When the dew is on the leaves, it is considered injurious to cut tobacco, for when laid on the ground a considerable amount of dirt will adhere, stop the pores, and prevent successful curing. Nor is it cut in the morning, even after the dew is off, if the day promises to be a hot one, because it will be liable to sunburn before it can be taken to the scaffold or the barn. The most approved time for cutting tobacco is in the afternoon, when the rays of the declining sun have been tempered sufficiently to prevent sunburn, but not enough to keep the plants from wilting properly, from three to four o'clock being the best time.

The instrument employed for cutting tobacco is a butcher-knife of medium size, with a thin and sharp blade of about six inches in length. The handle of the knife is wrapped with old rags, in order to relieve the pressure on the hand. The person who cuts stands over the plant, places the blade of the knife nearly at right angles to the two upper leaves, and splits the stalk from the top to within a few inches of the lower leaves. Withdrawing the knife and grasping the plant with the left hand, he bends it slightly from him and severs the stalk an inch or two below the lowest leaves. The plant is then inverted and set up in the middle of the row, or over the stub, care

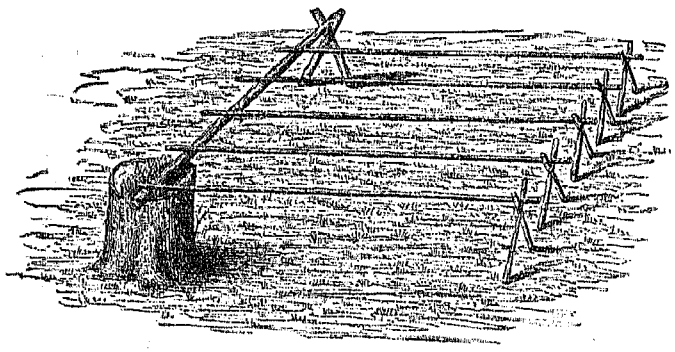
being taken not to let any of the leaves be perforated by the stub. In this condition it stands until it wilts, which on a warm day, with tobacco of medium size, will require half an hour.

The management of the plants after they wilt varies with different planters, but the most common course is to put them in piles of six or eight, or as many as may be deemed sufficient to put on a stick. These piles are made with the heads of the plants turned toward the sun, and the tails of the leaves carefully tucked under. The plants of two rows are put in one row of piles, and the pile rows are arranged in groups of two; that is to say, the plants from four rows are piled on the two central rows. This leaves room for a wagon to pass without danger of running over the piles, and facilitates the dropping of the sticks, one of which is put beside each pile. The next thing is to hang or straddle the tobacco over the sticks. For this purpose the stick is set firmly in the ground at an angle of about 45 degrees with the surface of the ground, the stick leaning away from the sun. The plants are now taken, one by one, and straddled over the stick, with heads toward the sun. The subjoined engraving will illustrate what has been described.



When all the plants are strung, careful planters tuck the tails of the leaves under them. The tobacco is now ready to go to the scaffold or the barn. If the tobacco is very heavy, and the barns are at an inconvenient distance from the fields, planters usually prefer to scaffold until the tobacco is lightened by evaporation and dessication, when much larger loads may be carried and a large amount of labor saved. When tobacco is to be air-cured, the scaffold is almost always employed for a week or more. If the weather foreshadows rain, it is desirable that the tobacco be put under shelter as soon as possible. The points of practice are: 1. To keep the rain from catching it while on the ground after it is cut; 2. To keep it from being caught by rains while on the sticks; and 3. To keep it free from rain while on the scaffolds. The amount of damage which the tobacco will sustain by rains will be very great in the first case, less in the second, and least of all in the third.

Some farmers prefer to carry the plants directly to the barn when they are well wilted and before they are hung, and in such cases it has been found convenient to carry them in low sleds, when they are immediately hung up. Two sleds are usually employed, and a part of the force is kept busy loading one sled in the field, while the other part is engaged in hanging the tobacco from the sled in the barn. Scaffolds are built with poles four or five inches through and as long as they can be conveniently handled. These are supported four feet above the ground by forks at one end, the other resting upon the bed pole, which is placed at right angles to the tier poles. One end of this is usually placed on a high stump or on the corner of a fence, and the other supported by stout forks.



When first put upon scaffolds, the usual plan is to crowd the sticks together, for tobacco soon wilts and lightens by evaporation, so that there is ample space between the sticks for the circulation of air. In from three to five days it is carried to the barns and arranged upon the tier poles, the sticks being placed six inches apart.

When tobacco is carried directly from the field to the barns without scaffolding, more space is required upon the tier poles, or there will be danger from pole-sweat. Each stick then occupies a space of eight inches. When carried to the barn on sticks, a long frame is frequently employed, four feet deep, four feet wide, and open on the sides, and the tobacco is placed on the frame in the same manner as that in which it is put on the tier poles, only it is crowded as closely as possible. The saving in hauling is about one-third when the tobacco has been on a scaffold for a few days. Many farmers haul on an ordinary wagon body, or on one made for hauling wood, a few planks being put in the bottom, and the tobacco being laid flat, in "coops", the sticks being placed parallel with the frame of the wagon. These are laid right and left, with the butts of the tobacco out and tails overlapping in the middle, and is piled up in two or three "coops" to the height of four or five feet, the "coops" being supported by long standards on the sides of the frame. This method of hauling tobacco is objectionable because the lower plants are liable to bruise by the superincumbent weight. It is considered a fair day's work for one hand to cut and house one hundred sticks.

CURING TOBACCO.

At one time in the Clarksville region great efforts were made to cure the crop dark, and for this purpose fires were kindled under the tobacco as soon as it was taken to the barn from the field, without waiting for it to yellow or even to wilt well. The consequence was the production of a bluish color, answering the purposes of no market, and classed as *nondescript*.

There are two methods of curing pursued by the best planters. One is to scaffold in the field for four or five days, until the tobacco is well yellowed, then haul to the barns and apply heat by means of good seasoned wood, placed in trenches dug in an earthen floor. Two logs are placed side by side in these trenches, and fires are kindled all along their points of contact. If the bottom of the trench be made sloping, the logs will remain pressed up against each other. Sometimes it is necessary to lay a small stick of wood over the line of contact, in order to keep the fires steady. Seasoned hickory wood is preferred, as it gives out less smoke and burns readily, and, when once on fire, it will burn steadily until wholly consumed. The only objection to this kind of wood is its tendency to sparkle, which, under some circumstances, might endanger the barn by fire. The heat is kept at about 90° for the first day and 120° for the second, afterward increased to 150°, and is kept at this point, or above it, day and night until the leaf is wholly cured, with the exception of half the stem. The fires are then put out; but should damp weather supervene, small fires are kindled in the barns every morning, so as to prevent the tobacco from being injured by the "running" of the half cured stems. If the weather, however, is bright, the doors of the barn are usually left open for a few days, when all danger from the green stems will be gone.

Another method of curing is to take the tobacco directly to the barns from the field and arrange it, already strung on sticks, on the tier poles, the sticks being put eight or ten inches apart. In this condition it remains for about three days—longer if the weather is cool. Slow fires are then put under it, and a gentle heat is kept up until the tails begin to curl, when the heat is increased to about 150°, and kept at that point until the tobacco is cured, with the exception of the stalk and the upper half of the stem. Good planters are very careful in keeping the heat gentle for a day or two, for tobacco, when very green, may be permanently injured by too much heat, which gives it a "coddled", lifeless appearance.

After the fires are once kindled, it is thought to be important to keep them in full blast day and night until the tobacco is cured. No injury, however, is apt to result, if the weather is clear and dry, by suspending the fires at any time.

In the Clarksville region at least 90 per cent. of the crop is cured by fires; in western Tennessee, about 75 per cent.; and in the Upper Cumberland district only about 25 per cent., the remainder being air-cured.

In air-curing, the tobacco is left upon the scaffolds for four or five days, and is then hung up in open barns where there is good ventilation. Air-cured tobacco, if ripe, is always brown in color when cut, and to prevent its piebald or yellow colors from changing to a brown it must be kept excluded from a damp atmosphere, either by packing it down or by kindling small fires under it whenever moist weather occurs.

The price of tobacco depends very much upon the manner in which it is cured, a fancy article often bringing on the market three or four times as much as the same tobacco cured a dingy brown. A rich black color is always in demand for black wrappers, but this color is more the result of the soil upon which it is grown than of the methods of curing. A heavy, rich manured lot is more likely to grow tobacco that will cure dark than a clover or grass sod. The tendency, when grown on rich, new oak lands, is to cure a bright brown; on fresh lands, where the tulip tree grows, a rich piebald; on hickory lands, a golden yellow. One correspondent from Henry county, in speaking of the advantages derived from skill in curing, says:

> Mr. Jackson Wimberly, one of the most skillful curers in the county, realized $12 50 per hundred pounds for his entire crop in 1878, and Mr. William Gulledge $10 per hundred for a part of his crop grown in 1879. Others grew as good tobacco as either of these gentlemen, but, lacking skill to cure it properly, they readily took $5 per hundred, showing a difference of from 100 to 140 per cent. in favor of the skillful curer.

ASSORTING, STRIPPING, AND PREPARING TOBACCO FOR MARKET.

Good planters always put their most careful hands to the work of assorting. The various qualities and colors are first separated, and these are afterward arranged into various grades. In the same crop there are often bright and dark tobacco, heavy and light, rich and poor, long and short, the product of different plantings, of diversified soils, and of freshly cleared lands. Much can be done in the way of assorting when the tobacco is cut. It is the practice with tobacco-growers to keep that grown on freshly-cleared lands separated from that grown on old manured lots, the long from the short, the ripe from the green or frosted, and each kind is put in a different barn, or on different tiers of the same barn. This is considered a great help when the season for stripping and preparing it for market comes on. The stripping rarely begins until November, for in all the tobacco districts of the state the month of October is usually consumed in sowing wheat, and the tobacco is not then considered sufficiently well cured to strip. During the warm, soft days in November, when the leaves are pliant but the stems dry enough to crack when bent, a large portion of the product is taken from the sticks and packed in bulks. These bulks are covered with planks or sticks, and are sometimes surrounded with wheat straw, to keep the exposed heads in a damp condition. The stripping may then be performed during the winter months, especially if a room heated by a stove is provided. If the weather is severely cold, tobacco cannot be handled without injury outside of such a room; and it is not taken down by the best planters in cold weather, for though it may appear to be in proper condition, it will quickly sour should warm weather supervene.

Many planters prefer to take down their tobacco only as they strip and assort it, because the leaves, not having been compacted in a bulk, are much more easily examined, and less time is required in separating the various grades. The chief advantages of having tobacco in bulk are:

1. That it is always in condition, and gives employment in bad weather oftentimes when that left hanging in the barn is not in proper condition.

2. If taken down in a good season, and in right case, it need not be hung up again.

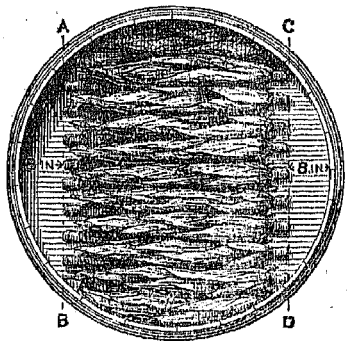
3. That it suffers no damage from high winds, and from the frequency with which it will go out of and come in "case", if left hanging in the barns.

Supposing the tobacco to have been taken down in proper condition for handling without breakage, it is put upon a platform and every leaf is carefully scrutinized, and all the imperfect, much injured, and badly worm-eaten and sunburned leaves are taken first from the stalk and tied by themselves. These constitute planters' lugs. In the vocabulary of tobacco dealers, all the product except lugs is termed "leaf". The leaves which are but slightly eaten or injured make what is called low leaf, or seconds, which are kept separate from the lugs, the remaining leaves being termed good. There are various grades of good, viz.: Medium, which may be short, or poor, or of bad color; good leaf, which may be long and poor, or short and rich, or of excellent color without being either long or very rich; fine leaf, which has nearly all the desirable qualities, lacking in only one or two; selections, which combine all the qualities of length, richness, good color, small stem and fine fiber, silkiness, body, elasticity, gum, and fatness. The basic idea in assorting is that there shall be a uniformity in length, color, and quality, and this uniformity should be preserved in all the leaves which enter a bundle, and the bundles themselves should be classified in the same manner.

In stripping tobacco, the leaves are pulled from the stalks and tied in bundles. The size of the bundles is considered a very important matter. If the tobacco is to be sold loose to a dealer for the purpose of stemming, the usual practice is to tie into hands as large as one's arm, or even larger; but if the tobacco is to be packed and pressed into hogsheads and offered for sale by samples after inspection, the bundles are made to contain not more than five or six leaves. In the management of this peculiar type of tobacco neatness in tying the hands is considered of prime importance. A rough, shabby tie will injure the sale 10 per cent. The leaf selected to tie with is usually small. This is smoothed out at the tail and doubled over, so as to make a band an inch wide. This band, with the stem downward, is wrapped tightly around the head of the stems, and is then tucked between the leaves. Careful handlers pass each bundle through the hands as it is tied, so as to press the leaves together. It is then laid back in its proper place on the stripping pile. If the tobacco is in proper order for packing in hogsheads, it may be put in immediately; but the more common way is to bulk it down.

Tobacco for bulking having been laid in piles before the platform, is taken up, two bundles at a time, and passed through a succession of hands, each person through whose hands it passes straightening, pulling, and squeezing the bundles from the heads to the tails, so as to make a cylindrical roll, the last person passing the bundles to the bulker, who lays them down side by side, keeping the heads in contact and even with the outer edge of the platform and the tails drawn closely together, pointing to the middle of the platform. A similar course is run on the other side of the platform; then two courses in the center, the heads of the bundles resting midway the first and second courses and tails overlapping in the center. These four courses form the first layer of the bulk, and this operation is continued until the bulk is finished. The bulker, on his knees, packs before him, keeping the bundles laid flat and pulled up closely meanwhile with his right hand and forefinger, placing the leaves of each two bundles, as he puts them down, separate, and not suffering them to spread out, fan-like, over the other bundles. The bulk is thus built up like a solid wall of masonry. Sometimes the center of the bulk builds up too rapidly; then one of the middle courses is left out. It is very necessary to keep the top of the bulk level, as otherwise, when the tobacco is taken up, the bundles will be bent. When finished, it is covered and weighted.

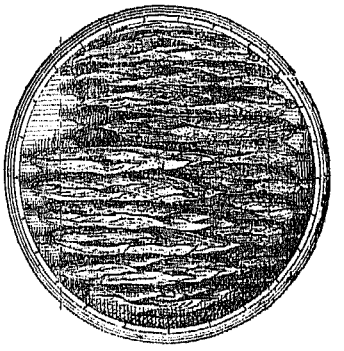
There are two ways in which tobacco is packed in hogsheads, both of which have their advocates among good planters. One of these, called the "square pack", is made by running two courses across the bottom of the hogshead, the heads of the central bundles in a course being about eight inches from the staves, as indicated in the accompanying diagram.



A course is run from A to B, the bundles being placed at right angles to this line, and a second is run from D to C, the tails of the bundles overlapping the first course. The third course will cross these at right angles, the heads of the bundles resting on a line drawn from A to C. The heads of the bundles, forming a fourth course, will rest on a line drawn from B to D, and overlapping the third course. In every case the courses must be run out to fill the round of the hogshead. These four courses are called a layer.

The second method of packing is to run two courses, as in the first instance, and then two more with the bundles in the same direction as in the first two, but with the heads jammed against the rounds of the hogshead, as shown in the diagram on page 187.

These bundles are usually put in one at a time and pulled up close to each other, and when pressed properly come out of the hogsheads straight and firm, but open easily. It is the habit of some planters, particularly of those residing in the Upper Cumberland River district, to press their tobacco very heavily; and it is said by New York dealers that the heaviest hogsheads received in that market come from this district, some of them weighing as much as 3,000 pounds each, the tobacco being so bruised by the heavy pressure that in many cases it can only be used by snuff-makers. In the Clarksville district from 1,400 to 1,700 pounds are considered about the average weights for fine tobacco and lugs, but within recent years the tendency has been to make lighter hogsheads, for nearly all the European markets prefer tobacco that will open freely when it comes from the hogshead.



False packing, or "nesting", is when inferior or short tobacco is packed in next to the staves, where inspectors are least likely to observe it. This practice is made an indictable offense by the laws of Tennessee. The practice observed by all honest planters, when there is not enough of any one grade to fill a hogshead, is to put in all of one kind first, and then fill up with another, but not to mix the two grades in one layer.

All rich or moderately rich leaves of uniform color, 26 inches in length and over, are tied neatly and packed in hogsheads made to weigh about 1,400 pounds. This is called a Liverpool African, and is shipped through Liverpool to the African market. When the tobacco is 30 inches long and over, and pressed as above, it is called a Boston African. Both these grades also make what is called a good English shipper. When dark brown and silky, it may be classed as a Swiss wrapper; when of a mottled and light brown color, with good body, it may be classed as a German saucer.

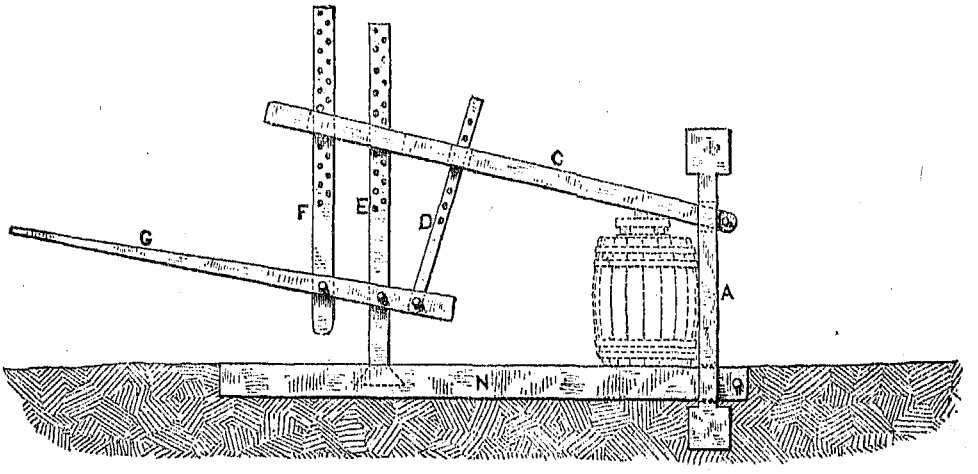
Short, rich tobacco makes good shippers for Germany and for Great Britain, and such tobacco is usually pressed into casks which are made to weigh about 1,600 pounds. Heavy, bad lugs are more heavily pressed, a hogshead weighing sometimes 1,800 to 2,000 pounds; but if the lugs are of good body, and not much worm-eaten, nor blistered, nor dirty, but are suitable for fillers, the hogsheads should not weigh more than 1,500 or 1,600 pounds net. Light, fancy yellow tobacco is prized more lightly, 800 to 1,000 pounds sometimes being sufficient to put in a hogshead.

The casks vary greatly in size in the different portions of the state. In western Tennessee they are 56 inches high and 44 inches in diameter; in the Clarksville region, 56 inches high and 42 inches in diameter, sometimes 54 inches high and 40 inches in diameter; in the Upper Cumberland River district, 60 inches high and 42 inches across the head. Very often, however, they are much larger, some of them being 6 feet high and 50 inches across the head.

The casks or hogsheads are usually made of red-oak staves, rived and drawn, but sometimes they are sawed and are strongly bound with flat hoops made of young white oak, though small hickory poles, divided in halves, are occasionally employed. Staves sawed from the wood of the tulip tree are used to a considerable extent in the Upper Cumberland district, though rarely in the other parts of the state. When sold with two heads, hogsheads cost from $2 to $2 25 each. Planters sometimes prefer to furnish one head themselves, and in that case the cost of the hogshead is $1 75. Sticks cost 25 cents per hundred. Tobacco is very rarely packed in boxes, and when these are employed for the purpose they are procured at second-hand from the merchants.

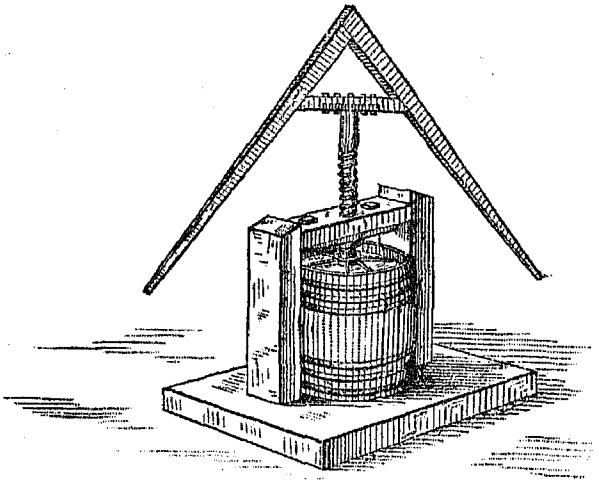
TOBACCO PRIZES AND THEIR CONSTRUCTION.

What are known as the beam and lever prizes have three "swords", two movable, but the third dovetailed into the ground sill upon which the hogshead stands. This sill passes through a mortise in an upright post, which is set four feet in the ground. The beam which brings the pressure on the tobacco in the hogshead is also mortised into this post about six feet from the surface of the ground. When the beam (C) is thrown up by the small sword (D) a pen of stout blocks is built upon a loosely fitting head that lies upon the tobacco in the hogshead. The lever (G) being raised, a pin is put through a hole in the first movable sword (F) above the beam and the lever is pulled down. This has the effect of drawing down the beam (C) on the tobacco, and it is kept down by the insertion of a pin above it in the fixed sword (E). This process is repeated until the beam is brought to a level. If the tobacco in the cask



should not be pressed sufficiently hard, the pins are worked out by a reverse process, the beam thrown up and more blocks put under, and it is then again worked down. The illustration on the preceding page represents the beam and lever prize, and the dimensions of each piece are given, so that any carpenter can erect one.

A is an upright post, 18 by 6 inches, with mortises 6 feet apart for beam and undersill. The size of the mortises is 10 by 3 inches. This post is set in the ground to the depth of 4 feet. N is a ground sill 18 inches thick, of which the top surface only is hewn. This is placed level with the surface of the earth, and forms a foundation for the hogshead to rest upon. This sill is let into the upright post by a mortise. C is the prize beam, 11 by 9 inches, tapering to 9 by 7, and 15 feet long. It has two mortises, the first 9 feet from the post (A), 5 by 3 inches, for the uplifting sword (D); the second one foot from the smaller end of the beam, and 4 by 20 inches. Through this both the movable sword (F) and the fixed sword (E) are put. E is a fixed sword, 12 feet long, 7 by 2 inches, dovetailed into the ground sill. F is a movable sword, 10 feet long, 7 by 2 inches, and is moved up and down by the lever G, which is 24 feet long, with mortises for E and F and a half mortise for D. The size of the lever is 7 by 7 at the larger end, tapering to 3 inches at the smaller end.



This prize, with one even more simple in construction, has been used by the average planter in Tennessee for nearly half a century. With two such, filling up the casks alternately under each one, thereby giving time for the tobacco to be fixed in its pressed condition, three good hands may prize a hogshead weighing 1,600 pounds every day.

More recently screws of various kinds have been introduced, all of which are convenient and efficient. The accompanying illustration represents one of the best, which sells at from $40 to $60.

MARKETING THE TOBACCO CROP.

When tobacco is sold loose to dealers, it is usually tied up in hands of from twenty to thirty leaves, and sometimes it is sold in small bundles of five to six leaves to local dealers, who prize and ship it without stemming. The usual time of selling and delivering loose tobacco is from November to April. When tobacco is prized and put on the market the season for delivery extends from February to October; but more or less is delivered to the warehouses every month in the year.

From 15 to 25 per cent. of the crop of the Clarksville district is sold loose to dealers, generally at a specified price for the crop round, though sometimes definite prices for different grades are agreed upon. In almost all contracts it is stipulated that the tobacco shall be in good keeping order, and that only a certain proportion, generally 25 per cent., shall belong to the lower grades.

In the Upper Cumberland River district and in western Tennessee fully four-fifths of the crop is prized by the planters, except in Henry county, where probably half the product is sold loose to dealers for making strips and for manufacturing purposes.

When tobacco is sold at auction on the market, samples are drawn from four or more places, the cask being first stripped from the tobacco. These samples are drawn by inspectors, who are the warehousemen themselves or their deputies. The state laws permit any citizen to open a warehouse under certain conditions and regulations. Among other regulations, the warehouseman is required to keep good and sufficient scales for weighing tobacco, which shall be tested at the beginning of each tobacco year, and every three months thereafter, by the keeper and sealer of weights and measures for the county, and at any other time when written application is made by two or more planters or burghers. He is required to keep the necessary breaking-irons for the proper inspection of tobacco, and screws for proper cooperage and return of loose tobacco to the hogshead after inspection. By the law he is created inspector of tobacco, and is required to take an oath for the faithful performance of his duty. He is also empowered to appoint deputy inspectors or samplers, for whose acts he is responsible. This inspector, or one of his deputies, is required to inspect the uncasing or breaking of any tobacco for inspection and to examine and classify the same according to law; to break each hogshead for inspection in at least four different places, drawing from each break at least four bundles from different courses or layers, so as to get a fair and just representation of the quality and condition of the tobacco; to place these bundles together in one sample, stamp it "state tobacco inspection", and mark with ink upon the label of the sample the name of the warehouse, the planter's name, the warehouse number, its approximate gross weight, date of inspection, and the name of the inspector who drew the sample. These samples he is required to mark "A" or "Admitted", if sound, well-assorted leaf tobacco, clear of lugs or trash, and in good keeping order, but to mark all lugs or trash, or clean leaf tobacco if not in good keeping order, with an "R", for "Refused". If the hogshead is insecure, or is made of green timber, he is required by law to condemn

it and have it put in proper merchantable order at the cost of the owner, and if the tobacco be damaged so that the sample does not show the character and extent of the damage, he is required to mark it "Damaged" on the label. If any hogshead of tobacco is falsely or fraudulently packed with intent to deceive, it is made the duty of the inspector to refuse to classify the same, and, when called upon for the facts, to give information to the grand jury about such hogshead from his books.

The compensation of warehousemen for receiving, storing, inspecting, coopering, and selling tobacco is regulated by law, as follows: For each hogshead of tobacco received and weighed, 50 cents; storage, 50 cents; inspection and cooperage, $1; reweighing, 25 cents; auctioneer's fee, 25 cents; for selling, rendering an account of sales, collecting the money, and paying it over, $1, and 1 per cent. commission on proceeds of sales—the whole cost of selling being $3 50 per hogshead and commission. Warehousemen are also permitted to charge $1 per hogshead for storage for one year or less, which is to be paid by the purchaser of the tobacco. Any warehouse keeper who shall charge more than is allowed by law subjects himself to a penalty of $10, and is declared guilty of a misdemeanor.

Planters are protected by being allowed to reject any bid offered, but in that case they are charged with the fees. A lien is given on the tobacco to the warehouse keeper for fees and charges; but no planter is prohibited from selling his tobacco at private sale, with or without inspection, though stored at a licensed warehouse.

Tobacco goes into "the sweat", or fermentation, with the advent of warm weather, from the middle of April to the middle of August, according to the weather and the order in which it has been prized. If in good order, this sweating process ripens it and improves its color and flavor; but if too damp, it comes out with mold, and is very tender. This applies more particularly to the tobacco grown in western Tennessee and in the Clarksville district, that grown in the Upper Cumberland district being generally injured by becoming harsh, dry, and lifeless. Mr. Wallace, a high authority on tobacco in New York, is of opinion that the tobacco grown in the latter district ought to be used before going into the sweat. But damage is not always confined to this tobacco, fully 50 per cent. of that opened in the Clarksville market in the year 1880 being injured by mold; but this was exceptional, the season having been very unpropitious for prizing tobacco. The usual proportion injured is about 15 per cent.

COST OF RAISING TOBACCO.

All definite estimates of profits in any industry are liable to be fallacious, the difference in the soils and the seasons, the degree of attention given, the reliability and capacity of the labor employed, and the quality of the the article produced, all being important but variable factors in the solution of the problem.

The following represents the cost of improved lands, and their capacity for production in the several tobacco districts of the state:

Districts.	Price of best soils per acre.	Price of inferior soils per acre.	Yield per acre on best soils.	Yield per acre on inferior soils.	Rent per acre of best soils.	Rent per acre of inferior soils.
			Pounds.	*Pounds.*		
West Tennessee	$15	$5	1,200	600	$5	$2
Clarksville district	35	10	1,200	600	10	3
Upper Cumberland district.	20	10	1,200	500	5	3

The range in prices for different qualities of land in the Upper Cumberland district is far less than in the other portions of the state. The prices paid for labor in the different districts are given below:

Districts.	Wages of men by the year, with board.	Wages of men by the year, without board.	Wages of men by the day, with board.	Wages of boys and girls of 14 years of age by the year, with board.	Wages of boys and girls of 14 years of age by the day, with board.
					Cents.
West Tennessee	$125@$150	$150@$175	$1 00	$60@$70	40
Clarksville district	130@ 160	150@ 200	75@1 00	60@ 80	40
Upper Cumberland district	100@ 110	140	75	40@ 50	30

Experts in curing tobacco frequently command much better wages than ordinary hands, especially in those districts where attempts are made to produce fine tobacco, as in Henry county, western Tennessee, and Montgomery and Robertson counties, in the Clarksville district. In all other portions of the state laborers in tobacco are paid the same prices as those engaged in the production of other crops, but in all the tobacco-growing counties labor is employed, for the most part, winter and summer, and wages are from 15 to 20 per cent. higher than in the stock-growing and cotton-producing counties.

For stemming tobacco the price paid is 50 cents per hundred pounds of strips made, and when men are employed at the factories in prizing tobacco they are paid from $1 to $1 25 per day, without board.

The estimated cost of the production of tobacco in the three divisions of the state, in detail, is subjoined. In western Tennessee, on the best soils, one hand can cultivate 3½ acres, and this will require his time for five months of the twelve; so that we have:

Dr.

Five months' labor, including board	$72 91
Rent of land, 3½ acres, at $5	17 50
Use of team, wagons, barns, and manure	20 00
Hauling to market	7 50
	117 91

Cr.

By 4,200 pounds of tobacco, at $5		$210 00
Profit on 3½ acres	$92 09	
Cost per acre	33 69	

Cost per pound to produce on best soils, 2.8 cents.

Should the production fall below 674 pounds to the acre, there would be a positive loss, unless the quality of the tobacco is such as to command a higher price. At $6 per hundred, the cost of production can be met with 562 pounds to the acre; at $10 per hundred, a yield of 337 pounds will pay all expenses incurred in production.

In the Clarksville district, the quality of the crops produced and the yield per acre are variable quantities, there being localities where 1,200 or more pounds can be produced to the acre, which will bring on the market, prized, from 6 to 12 cents per pound. In other places the yield is not more than 500 pounds to the acre, and the quality of the tobacco is such that it will not bring on the market over 5 cents per pound. Taking the best soils, however, the estimate will be as follows:

Dr.

Five months' labor, including board	$83 33
Use of team, wagon, and manure	20 00
Rent of land, 3½ acres, at $10	35 00
Hauling to market	7 50
Cost of growing 3½ acres	145 83
Cost of growing 1 acre	41 66

Cr.

By 4,200 pounds of tobacco, at $6		$252 00
Profit on 3½ acres	$106 17	

Cost per pound to produce, 3.47 cents.

It must be borne in mind, however, that this estimate is for the very best soils and the best labor. Taking the average yield for the district, which in favorable years is about 800 pounds per acre, and the average price 6 cents per pound, which is a full one, the whole amount realized from the work of one man, cultivating 3½ acres, will be $144, or a loss on every hand employed of $1 83. Unfortunately this estimate is too often the true one, and it will hardly be otherwise until the farmers of the district learn that heavy manuring of the land and the production of a superior article are the principal factors in the creation of profits. With manure to the value of $25 applied to every acre the yield can be made to exceed 1,000 pounds.

Still more variable are the profits in the Upper Cumberland River district. Where a fine type is grown and good prices are obtained there are evident signs of prosperity, but no progress is visible where the planters grow a poor leaf, which brings only 3 or 4 cents per pound. The average price of the best soils in Smith, Trousdale, and Jackson counties is not far from $25 per acre, and the rental value $5 per acre. Labor is worth, with board, $100 per annum; without board, $140 per annum. The yield of tobacco on best soils is about 1,200 pounds per acre, and the average yield, according to the returns of the enumerators, 819 pounds per acre. Taking the maximum yield and basing an estimate upon it, and assuming the amount cultivated by each grown man to be 3 acres, we shall have:

Five months' wages of one man, with board	$58 33
Use of team, wagon, and manure	18 00
Rent of three acres of land, at $5	15 00
Hauling to market	6 00
Total	97 33
By 3,600 pounds of tobacco, at 4 cents per pound, the average of all the counties in this district	144 00
Profit on 3 acres	46 67

Cost per acre, $32 44; cost to produce, per pound, 2.7 cents.

When the average yield per acre is only 707 pounds (the average for the state, as shown by the enumerators' returns) the cost of production is just about balanced by the amount received from the crop. Disregarding the amount raised for home consumption, the cost of that produced for market may be put at $4 50 per hundred pounds.

It will be observed that where the price of land is very low rents are disproportionately high, amounting often to over 25 per cent. of its value. Labor in 1879 was abundant and cheap. The relation between the price of rents and the value of lands depends mainly upon the supply of labor, and, as a rule, throughout the southern states the cheaper and more abundant the labor the higher the rents and the lower the lands, and *vice versa*. In some districts the rental value of the land for one year is half what the land would bring if sold in open market.

Throughout the state tobacco is, to a considerable extent, cultivated on the "share system". The chief objection urged against this system is that the land is apt to be run down, and the fencing is not kept up so well as when the labor is employed at a definite price. The saving and application of manure are neglected, and the steady habits of industry, so much needed to make farming profitable, are seriously interfered with. The "new and old field system"—that is, the clearing up of new lands and the abandonment of worn-out fields—has run its natural course in Tennessee. The next step will be one of renovation and restitution.

PRICES OF TOBACCO.

The following table, compiled from the schedules returned to this office, shows the price received by growers in the different counties of each district for the crop of 1879. The proportion of lugs in each crop will average from 25 to 30 per cent. Farmers usually classify into four grades, viz: Lugs, medium, good, and bright, the latter in localities where bright tobacco is produced:

WEST TENNESSEE DISTRICT.

Counties.	Average crop round.	Lugs.	Medium.	Good.	Bright and selections.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Benton	4½	2	4	5	8
Dyer	5	2½	5	6 to 7	.....
Henry	5½	2½ to 4	4 to 5	6 to 8	10 to 15
Weakley	5	2 to 4	4 to 6	6 to 8	.....
CLARKSVILLE DISTRICT.					
Cheatham	5	1½ to 3	3 to 5	6 to 8	.....
Dickson	4	2	3	5	6 to 7
Houston	4½	1 to 3	3 to 4	5 to 7	8 to 16
Montgomery	6	3	5	7	10 to 15
Robertson	5½	2½ to 3½	4 to 5	5½ to 6½	8 to 12
Stewart	5	2 to 3	4 to 5	5½ to 6½	8 to 11
UPPER CUMBERLAND RIVER DISTRICT.					
Jackson	4	1 to 2½	3½ to 4	6	7
Macon	3½	1 to 3	3½ to 4½	5	.....
Smith	4½	2 to 3	3½ to 4½	5	7
Sumner	5	2 to 3	3½ to 4	5 to 5½	.....
Trousdale	4½	2 to 3	3 to 4	5 to 6	.....
Wilson	5	2 to 3	3½ to 4½	5	7

A small amount of tobacco is grown in Scott county, on the Cumberland plateau, a region of great attractiveness on account of its elevation, its fine freestone water, its magnificent scenery, and its salubrious climate, but one whose soil is deemed by many as sterile. This tobacco, however, commands a very high price, reaching an average of 14 cents per pound, the finest grade of the crop of 1879, as reported on the schedules, bringing 18 cents. In no other portion of the state, except Unicoi county, does the average price exceed 6 cents. It may be that these sandstone soils will yet prove very profitable in the production of cigar tobacco, the samples exhibited from the Cumberland plateau showing great delicacy of structure and a wide wrapping leaf, mild and pleasant to the taste, and free from acrid bitterness.

In McMinn, Knox, and other counties of eastern Tennessee tobacco has been grown in years past, and is raised to a very small extent at the present time, but never with great profit, and on some of the slopes of the Unaka range a fine yellow wrapper is produced in limited quantities.

The soils of White, Coffee, Rutherford, De Kalb, Warren, Franklin, Lawrence, Wayne, Lewis, Perry, Hardin, and Hickman counties are identical in character with those of the best tobacco-growing counties of middle Tennessee, and the small patches raised for domestic consumption show the adaptability of the soils to its growth.

TOTAL TOBACCO PRODUCTION, ACREAGE, YIELD, AND VALUE.

Taking the production, acreage, yield, and value of the crops of the three tobacco districts of the state for the four years ending with 1879, and combining them, adding the production of the territory not attached to either of the districts, we have the following result, only the figures for 1879 being from census returns:

Year.	Production.	Acreage.	Yield per acre.	Value in primary markets.	Value per pound.	Value per acre.
	Pounds.		*Pounds.*		*Cents.*	
1876.....	28,463,676	41,677	683	$1,941,222	6.82	$46 59
1877.....	43,425,400	55,266	786	2,635,921	6.07	47 71
1878.....	28,900,382	42,658	677	1,445,019	5.00	33 85
1879.....	29,365,052	41,532	707	1,538,287	5.24	37 05

EXPERIMENTS WITH CUBAN TOBACCO.

A few experiments have been made with Havana tobacco grown from seed imported from Cuba. One of these was made by Mr. W. B. Bryan, sr., near Clarksville, who says:

As requested, I give you an account of the manner of growing, handling, and curing tobacco grown by me in 1868 from fresh Cuba seed. The seed and special instructions were furnished by a friend who was a resident of New Orleans, but the owner of a large tobacco plantation in the province of Vuelta Abajo, in Cuba. I first soaked the seed in fresh milk forty-eight hours, keeping them in a warm room. Without allowing them to dry, they were mixed with ashes and sown on a bed prepared in the usual way by burning. I selected rather gravelly hillside land of good quality, prepared it well, and cast it up into ridges three feet apart. The ridge was cut through with a hoe, taking off about one-half of it at spaces as near twenty inches apart as could be done. The plants were set out and kept well worked, allowing them to run up until the blossom bud shot out, which I pinched off, but did not prime the plant. I let the suckers grow to about two inches in length; turned out one of the most vigorous next the ground for a second crop; broke down from one side all the rest, taking care not to break them entirely off, but leaving them hanging by the skin on one side. I had no more suckers to trouble me or draw the sap from the growing plant. I found many of the suckers struggling for life when my tobacco was ripe. The same plan succeeds well with our heavy tobacco. The plants were allowed to stand until thoroughly ripe, which is of great importance. The leaves are then stripped from the stalk as is fodder from corn. The stalk was cut above the sucker, and the latter was worked and treated in every respect like the first crop. This second crop was somewhat smaller, but was much finer, richer tobacco, and ripened about the 10th of October. When the crop was ripe and stripped from the stalk, I dug a pit long enough and two feet deep, just as though I was preparing to barbecue meat, filled it up with sound hard wood, which I set on fire. When the wood burned down, I carefully raked off all coals. I had freshly-cut crab grass ready, clear of weeds, with which I lined the bottom, sides, and ends of my pit, and packed the freshly-stripped tobacco smoothly and closely down and covered it over with about four inches of crab grass, and then put on eight or ten inches of earth, being particular to leave no part uncovered to allow the steam to escape. It remained in this condition about forty hours. I then stripped off the covering and took out the tobacco. The water was streaming from a black, unsightly, and, as I thought, ruined mass. Still I obeyed instructions, tied the leaves into small hands, put them on sticks, and hung them up in the open shed of my barn. I was so sure that my trouble and labor had been thrown away I felt no anxiety to look at it. The fourth day I was riding by the barn and happened to pass on the windward side. I caught a whiff that brought me to the ground immediately. I threw open the door of the shed and was saluted by a perfect billow of rich, real Havana aroma filling the entire barn. My tobacco was as dry as snuff and perfectly cured. The first damp day brought the leaf in order, when I packed it in a large dry-goods box, nailed it up, and stored it in a dry room. I did not open it for one year. None but a connoisseur can imagine what a luxury I enjoyed in return for my perseverance. The tobacco was very dark, almost black, and was equal to the best cured Havana tobacco.

CHAPTER XVI.

CULTURE AND CURING OF TOBACCO IN VIRGINIA.

A SHORT HISTORY OF THE TYPES OF TOBACCO PRODUCED IN VIRGINIA AND MARYLAND

The original standard type with the planters of Virginia and Maryland was what is now termed the dark export type. For a long series of years the laws regulating production, especially those passed by the colonial assembly of Virginia, requiring all of the product that failed to come up to the legal exactions of quality and soundness to be burned, were rigidly executed. Tobacco was all raised for export, then the only market, and the price being uniform, whether for sale or as a circulating medium, it was necessary to institute an inspection to compel uniformity of grade.

With a virgin soil of great fertility, the planter who did his work well had reasonable assurance that his crop would "pass". (*a*) Its cultivation was commenced by the colonists in the historic town of Jamestown, in James City county, and John Rolfe produced the first tobacco exported from the colony.

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786 *a* A word used by inspectors to brand all hogsheads of tobacco fit for export.

Captain John Smith describes the soil of tidewater Virginia as he saw it in 1607: "The vesture of the earth in most places doth manifestly prove the nature of the soyle to be lusty and very rich."

The culture of tobacco rapidly spread as the colonists built houses and cleared lands, the tobacco-patch often taking precedence of the corn-field, and its production being carried to such an excess as seriously to threaten subsistence of the colonists, the colonial legislatures of Virginia and Maryland passed sumptuary laws that "every person planting one acre of tobacco shall plant and tend two acres of corn". As tobacco grows better on new soil than corn or other crops, it was the first to utilize the fresh cleared land. New soil produces a finer and better flavored article than old land; therefore thousands of acres of forest were annually cleared. Thus extensive areas in Virginia and Maryland were early denuded of forest growth, and the continued cultivation of tobacco for many years on the same lands without manure greatly impoverished the soil; for a Virginian never thinks of reinstating or manuring his land with economy until he can find no more new land to exhaust or wear out" (William Tatham, *Historical Essay on the Culture of Tobacco:* London, 1800).

Tobacco raised on cow-penned land was considered of only second quality, and was sold accordingly. Tatham states that tobacco at first was cultivated continuously for twenty years on the same land, and describes the spots selected for seed-beds as those preferred at the present day—"rich, moist, fine soils, with sunny exposure." The "fly" was a trouble then, as now; and the remedy then practiced was "to sow mustard around the border of the plant-bed, and as the fly prefers the mustard to the tobacco plants the latter will escape injury". But of late years this irrepressible insect takes more kindly to the tender tobacco plants, and planters find it hard work to coax or to drive them off.

The primitive mode of harvesting tobacco in Virginia was "to pull the leaves from the stalks as they ripen and hang them on cords, to be dried in the sun and air" (Rev. Hugh Jones, *Present State of Virginia*, 1724). In after time they split the stalks and hung the plants astraddle of sticks, as is now generally practiced in Virginia.

The early planters cured their crops mostly in the sun and air. "In March or April the tobacco was conveyed to the storehouse and dried with fire. * * * Salt was used in passing tobacco through the sweat." In time "smoke was considered a prime agent in keeping tobacco sound. * * * Small, smothered fires were used, made of bark and rotten wood". The fires were increased from year to year until log fires were built in three rows upon the barn floors, which dried out the green tobacco in from three to five days. The firing process prevailed generally in both Virginia and Maryland, and was kept up for a long series of years. Maryland finally abandoned it; but in the dark shipping district of Virginia it is still the mode practiced, except that less fire is now used than formerly.

After the close of the war of 1812–'14 the demand for colored tobacco for export caused a change in the process of curing in both Virginia and Maryland. After being cut and hung upon sticks, the tobacco was either placed upon scaffolds in the sun to yellow and then housed, or it remained several days in the house, without fire, until it had yellowed sufficiently to receive the heat without curing dark. Many planters in the two states learned to cure a beautiful piebald or spangled leaf, which commanded high prices in Richmond and in Baltimore. In the former city it was called "piebald"; in the latter, "spangled."

Open wood fires constituted the only mode of curing by artificial heat until about the year 1828 or 1829, when flues were first used in Virginia, Dr. Davis G. Tuck, of Halifax county, being the originator of the flue constructed inside the barn, for which he obtained a patent. This plan, however, was adopted by but few planters, and soon fell into disuse.

About this time began the use of charcoal as fuel for curing tobacco, enterprising planters in Halifax and Pittsylvania counties, Virginia, and in Caswell county, North Carolina, being among the first to substitute it for wood. The results were such as to induce others to adopt the new process, and thus it spread from farm to farm throughout neighborhoods, and afterward from state to state, until it has extended over a wide area of the tobacco belt.

Meanwhile improvements were made upon flues, mainly since 1865, which justified their substitution for charcoal open fires in the yellow tobacco belt of Virginia and North Carolina. Charcoal is now but little used. Flues are constructed either of brick, stone, or mud walls, or by digging ditches in the floor of the barn, and some are wholly of iron, furnaces and pipes, and these are generally patented.

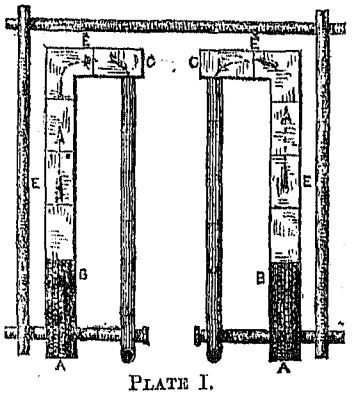


PLATE I.

A diagram of a cheap, efficient, and durable flue is given in Plate I, showing the ground plan of a tobacco barn 20 by 20 feet and the arrangement of the flues therein. Plate II shows the elevation.

To construct flues on the plan given, it is first necessary to cut out two or three logs from the end of the barn; then build the walls of the flues 12 or 13 inches distant from the sills or walls of the barn, as at EEEE, in Plate I, and projecting outside the walls at AA 18 inches. Build the walls of flues 18 inches apart, and 18 to 20 inches in height at the openings AA, decreasing in height as they run back to 14 inches at CC. Put in sheet-iron pipes at CC, 10 or 12 inches in diameter, equidistant from the flues and from each other, and carry them through the body of the barn, out at DD, with the ends elevated at DD 3 feet higher than at CC. The flues should be arched with

brick or covered with flat fire-proof stone for about 5 feet—from A A to B B; then cover the flues from B B to C C with sheet-iron. Use No. 16 iron nearest the fire, commencing at B B, and thinner iron, No. 18 or 20, for the remainder of the covering.

PLATE II.

A number of patent flues are used, some of which greatly economize fuel and perform admirably, and where the saving of fuel is an object they are to be preferred.

A cheap flue is constructed by cutting ditches in the floor of the barn from 15 to 18 inches wide and as deep as necessary and covering them with sheet-iron, as recommended for the stone or brick flue. A better one is made of mud walls, covered with sheet-iron. The mud walls are built by placing two wide boards from 12 to 14 inches apart and packing moist clay between them, beating it down hard, in position and arrangement similar to the walls of stone, and covering with sheet-iron. Upon firing the flues the boards are burned away and the dirt walls are hardened. If the clay is of proper quality, such as is fit for making tolerably good bricks, these walls will last a long time. It is necessary with the ditch or mud-wall flue to attach furnaces of stone, brick, or iron.

QUALITY OF TOBACCO IN VIRGINIA.

There are five distinct qualities of tobacco produced in Virginia, viz: Dark Shipping, Red and Colored Shipping, Sun- and Air-cured Fillers, Bright Yellow Wrappers, Smokers and Fillers, and Orange and Mahogany Flue-cured Manufacturing. These are severally characterized by peculiarities of color, quality, body, and flavor, the result of soil influence and variety, modified by curing and management.

DARK SHIPPING.—Of this there are four grades of leaf and two of lugs, classed as follows: 1. Dark, rich waxy leaf, English; 2. Nutmeg and mahogany leaf, English and Continental; 3. Dark red leaf, English and Continental; 4. Dull red leaf; 5. Long lugs; 6. Short lugs.

Dark Shipping tobacco is generally raised on rich lots, and is cured with open wood fires. The English, French, Germans, Spanish, and Italians take the bulk of this tobacco, with a growing preference for that cured without smoke. It is produced more or less all over the tobacco belt of Virginia, but the bulk of it is raised south of the James river and east of the Blue Ridge.

RED AND COLORED SHIPPING.—Like the foregoing, this tobacco is produced more or less all over the tobacco region of the state. The region producing most of it is colored red on the type map, and contains the following: Northeast of the region just described, Dinwiddie, Chesterfield, Goochland, and Fluvanna, with Rockbridge and all the counties west of the Blue Ridge down to the Kentucky and Tennessee lines, except Montgomery, which is classed in the yellow district.

This tobacco is divided into three grades: 1. Bright spangled; 2. Mahogany; 3. Cherry red; and is generally cured with open wood fires, a method which greatly detracts from its worth. The red and mahogany wrappers of this and the dark tobacco, if fine, sell well, notwithstanding the smell of smoke.

SUN- AND AIR-CURED FILLERS.—These include all that is cured without artificial heat, whether by the sun or by air, or by both. The counties raising this tobacco mainly are Caroline, Hanover, Louisa, and Spotsylvania. Their product is eagerly sought after by manufacturers, is never in oversupply, and those long accustomed to its use prefer it to all others, even to the White Burley.

BRIGHT YELLOW has many grades, the finest, smoothest, and brightest leaves being rated as wrappers: 1. Fancy; 2. Fine; 3. Medium, running 0, 00, 000, etc., according to quality and color; 4. Fillers, several grades. Lugs are graded as follows: Fancy Smokers, Fine Smokers, Medium Smokers, Common Smokers, Bright Lug Fillers, and Common Lug Fillers.

Instances are on record of its first grades having been sold for $3 and $4 per pound, and to sell at the highest average, or to obtain the highest price, is an honor sought by the best planters of the yellow belt.

FLUE-CURED FILLERS.—These are known as Henry county fillers, being produced mainly in Henry county and in portions of Franklin and Patrick counties. This tobacco is divided into fillers and wrappers, according to size, color, and quality, and is mostly manufactured into plug chewing. It is characterized by its tough, rich, silky leaf, and sweet flavor, due to the soil, the varieties cultivated (Sweet Orinoco and Flannagan), and the peculiar mode of curing by flues, both walls and tops of stone, and slow firing until the leaf is dried.

CLIMATE.

The climatic conditions most favorable to the growth and maturity of the Virginia tobaccos are in localities where the mean temperature ranges between 52° and 60°.

The mean temperature of Lynchburg, situate about the center of the tobacco belt east of the Blue Ridge mountains, is as follows (Hotchkiss' *Summary of Virginia*, p. 53):

	1869–'70.	1870–'71.
Spring	54.8	55.6
Summer	76.1	76.1
Autumn	54.5	59.8
Winter	42.1	40.5
Yearly mean	56.7	58.0

According to the *Statistical Atlas of the United States*, temperature chart, Plate VII, the isotherm, or mean annual temperature line, of 60° runs through Eastville, on the eastern shore, and then southwest, by Hickford, to Weldon, in North Carolina, and thence on to Montgomery, Alabama. The region southeast of this line, in Virginia, is in the cotton-producing zone.

The isotherm of 56° enters Virginia near Alexandria and runs southwest between Middle and Piedmont, passing through Lynchburg and a little west of Danville, thence through Greensboro', North Carolina, on to Atlanta, Georgia. The country between this line of 56° and that of 60°, before described, is the tobacco zone proper of the state.

The country west of the isotherm of 56°, on to 52°, includes all of Piedmont, the less elevated portions of the valley, and much of Appalachia, that portion included between 56° and 54° producing tobacco of fine quality, unsurpassed by that of similar type grown in any other portion of the United States.

The tobacco zone proper of Virginia lies between the isothermal lines of 58° and 54°, in a temperature where the frosts of winter penetrate to the depth of several inches, breaking the cohesion of the soil, forcing its particles asunder, and causing it to fall loose and mellow from the mold-board; where spring opens and vegetation puts forth early in the month of April; where the summer's sun shines with a warmth sufficient to expand and ripen without burning the tender leaves; and where autumnal frosts are delayed until the crop is matured.

The average rainfall is plentiful, and rarely excessive, throughout the tobacco zone.

The following table shows the average precipitation of rain and melted snow over the main tobacco belt of Virginia, the averages of 1869–'70 and 1870–'71 being calculated from tables in Hotchkiss' *Summary of Virginia*, pages 57, 58:

	Middle.	Piedmont.	Valley.
Spring	13.90	15.90	12.14
Summer	13.90	10.85	11.31
Autumn	8.50	13.05	17.70
Winter	10.30	7.70	9.20

The rain-chart in the *United States Statistical Atlas*, Plate V, shows that Virginia lies principally in the belt where the annual amount of precipitation is from 32 to 44 inches. The moist spring hastens the growth of the plants in the beds and facilitates their transplanting and promotes growth, a dry summer matures the leaves and mellows the juices, and a dry autumn gives body, gum, and oil to the product, and permits the gathering of the crop in good condition.

The tobacco belt proper has a dry climate, with a medium temperature, except for a short term of excessively hot weather.

The Virginia tobacco requires from 90 to 100 days after transplanting to mature well. Plants grown in the open air ought to be ready for transplanting on an average by the 20th of May east of the mountains, and by the 1st of June west of the mountains. If a propitious season follows, and the tobacco is properly cultivated, it will rarely fail to ripen before frost in either locality.

STORMS.

All of Virginia, except Tidewater—the country east of the tobacco belt—lies in the zone of the lowest number of storms (*United States Statistical Atlas*, Plate VI). The rain and wind storms, which usually do most damage to the tobacco crop, occur about the autumnal equinox, when the plant, from its size, is most easily damaged. The tier of counties on the eastern edge of middle Virginia, and bordering on Tidewater, suffer most, as the coast storms often extend inland.

VIRGINIA SOILS.

The soils of Virginia are as varied as the rocks they overlie. A geological survey of the state was made by Professor William B. Rogers in the years from 1835 to 1840. It is necessary to notice carefully only the soils of the tobacco area.

THE TIDEWATER REGION.—This is Tertiary, and its soils are principally alluvials—sand and clay. Tobacco was once cultivated over the greater part of this district, but it has long ago given place to crops more suited to its soils or to the choice of their owners.

THE MIDDLE COUNTRY.—This is the great tobacco-producing area of the state, bounded on the north by the Rappahannock, on the east by Tidewater, on the south by North Carolina, and on the west by Piedmont. It is an extended rolling plain, greatly diversified by hills and vales, forests and streams. Its geology is primary; its rocks Azoic, many containing mineral elements that by decomposing greatly enrich the soil, such as granite, gneiss, syenite, hornblende, mica schist, micaceous, talcose, and argillaceous slates and shales, and the sedimentary rocks of the Jurassic and Triassic formations. The soil varies in depth on the hills and plains from 2 to 8 inches, while along the rivers and creeks they are much deeper, in some places practically inexhaustible. The usual depth of forest soils is from 4 to 5 inches, with a subsoil rich in mineral elements. The tobacco soils proper are the rich bottoms and clay-loam lots for shipping, and thin, gray, light soils, fertilized, for manufacturing. This district produces about seven-eighths of the tobacco of the state, and of every grade heretofore described, except the flue-cured manufacturing grown in Henry and adjoining counties.

PIEDMONT.—Like the Middle division, this is in the primary region; but here the metamorphic rocks differ considerably from those of middle Virginia. The gneiss is coarser and darker in color. The hornblende and iron pyrites form large belts of red soil, called the "red-land district". Here is found more greenstone (epidote), and where this abounds the soil is richer, but is not better adapted to the manufacturing grades of tobacco. The belts of limestone which traverse portions of this district are overlaid by soils rich and admirably suited to grasses and the cereals, but they produce a coarse staple of tobacco, not much in demand, even at low prices. The tobacco *soils of this division are the low grounds and red-clay lots for shipping, and the gray uplands, sandy and slaty,* for manufacturing. The chief tobacco-producing counties of this district form a line along the eastern slope of the Blue Ridge southward from Madison, and include Henry county.

BLUE RIDGE.—This district forms the border between the Transition and Fossiliferous, and partakes somewhat of the character of both. Gneissoid sandstones, epidote, granite, syenite, slates, and shales abound in the east, while the western flank of the Blue Ridge is composed of the rocks of the Cambrian, Potsdam, Sandstone, and Primal. The abundance of epidote accounts for the great fertility of the soils of this division.

The gray sandy slopes and ridges are the best tobacco lands. The tobacco counties of this district are Floyd, Carroll, and Grayson.

THE VALLEY AND APPALACHIA.—In this district are included all the remaining counties of the state west of the Blue Ridge, southwest from Rockbridge, in the northeast, some of these counties producing but little, but all capable of growing, to more or less extent, a good type of tobacco. The lighter soils are the better, but the arenaceous soils of the mountain slopes and foothills are preferred. The limestone belt is an extensive one, rich and well adapted to general farming. The poorer siliceous soils, notably in Poor Valley, in Washington and Lee counties, are growing a fine article of brights, but the south and southeastern slopes of the mountains also produce desirable manufacturing grades.

While the above are classed in the red and yellow shipping district, there are extensive areas in most of these counties well adapted to produce the bright yellow type, as is being demonstrated by individual planters every year.

SURFACE ROCKS OF THE TOBACCO REGION.

In a narrow section of Albemarle county limestone suitable for burning is found in abundance; in other parts iron pyrites are found in large quantity, and large tracts are covered with quartz. Such lands are quite poor. Slates and shales are found in many neighborhoods. Where feldspathic, gneissoid, and hornblendic rocks come out the best tobacco soils are found.

Greene, Madison, Nelson, Amherst, Bedford, and a portion of Franklin exhibit the same surface rocks as Albemarle, except that there are less iron pyrites in some of the counties, less limestone, and more of the Azoic rocks cropping out and on the surface.

Buckingham, Cumberland, Amelia, Prince Edward, Charlotte, Nottoway, Lunenburg, Dinwiddie, Brunswick, Mecklenburg, Campbell, and a portion of Halifax counties, of the Middle division, south of James river, may be classed together as generally of like formation. This group, like that portion of Piedmont above described, belongs to the Eozoic or Primary formation. Here the rocks which most commonly come to the surface are granite, syenite, gneiss, and quartz, micaceous, talcose, and hornblendic slates, and occasionally argillaceous slates, sandstone, steatite, serpentine, etc.

The counties of Chesterfield, Powhatan, and Goochland, being largely on the Jurassic and Triassic formations, the rocks in places are sandstones; in others, granites.

Hanover, Louisa, Caroline, Fluvanna, and Spotsylvania—the air-curing district—are for the most part on the same formations (Primary, running through the Triassic and Jurassic), and differ somewhat from the last group mentioned in the underlying and the surface rocks, as also in the soils. The gneissoid rocks of western Hanover and Caroline pass into the micaceous and hornblendic in Louisa, Spotsylvania, and Fluvanna, constituting the best tobacco soils of this famous sweet-filler section.

Pittsylvania, Henry, Patrick, and portions of Halifax and Franklin counties—the yellow tobacco district east of the Blue Ridge mountains—may be classed together, as mainly of the same geologic formation, the outcropping rocks being principally quartz, syenite, feldspathic and hornblendic, mixed often and largely with mica, slate, etc.

Rockbridge, Botetourt, Roanoke, Craig, Montgomery, Giles, Bland, Tazewell, Russell, Scott, and Washington counties are principally on the Cambrian, Silurian, and Devonian, the rocks being mainly limestone, sandstone, Potsdam shales, slates, greenstone, epidote, and hornblende. The soils vary from very poor to very rich. The siliceous soils are best adapted to tobacco, limestone soils producing a strong, bony tobacco, of inferior quality.

CONDITION OF TOBACCO SOILS.

The soils of the Middle and Piedmont districts best suited to tobacco are generally of easy tillage. The stiff red clays are refractory if plowed out of condition; but if well broken in the fall, turning under vegetable matter, they become friable in the spring, are readily brought into fine tilth, and, if properly handled, work easily all through cultivation. A soggy blue clay never works easily, and should never be planted to tobacco.

All the light gray soils, sandy or slaty, are easily worked; and these are the preferred soils for fine tobacco. Many counties abound in a rich, flat soil, too wet for any crop, and hundreds of thousands of acres of valuable land lie idle for want of drainage. Little progress has been made in reclaiming these lands. Some good soils in the mountain region are hard to cultivate, owing to the steepness of the hills and the abundance of bowlders and loose stones on the surface.

The soils of Virginia east of the mountains are generally tender, as the galled and gullied surface over large areas too plainly indicate. For generations the mode of culture has been of the shallowest and most imperfect character, followed by its inevitable results—an impoverished soil and fields abandoned, because no longer capable of yielding a return for labor. Many good farmers are improving their lands by deeper plowing on all lands cultivated and by adopting the horizontal system on hilly lands, so as to dispose of surface water without cutting the soil into gullies.

Of the gray soils, the gneissoid and micaceous are the most tender, the syenitic, hornblendic, feldspathic, and argillaceous being less liable to wash.

The valley and mountain soils are generally of close texture, and are not liable to wash, except on some of the sandstone spurs of the mountains.

Nearly every foot of land in the Middle and Piedmont divisions west of longitude 77° 30′ and south of latitude 38°, now in old fields, occupied by pines, broom-straw, briers, and sassafras, produced while under tillage one or more crops of tobacco. Thousands of acres of such lands are capable, with a little help, of producing tobacco again, in some cases of a better type than the first grown upon them. No reliable estimate can be made of the number of acres turned out as old fields, or of the proportion such lands bear to the area once cleared; but a careful analysis of reports justifies the opinion that of the lands turned out more than three-fourths are in an improving condition, ready to furnish large supplies of fuel, compensating in some measure for the destruction of the original forest. In some sections, especially of the Middle district, there are now more "old fields" than arable lands, while in others these rarely occur. The exhausted lands, gullied and washed until there is none of the original soil left, are for all practical purposes worthless, and are likely to remain so for a long time.

Lands in the tobacco belt east of the mountains, when worn and turned out, grow up first either in "poverty grass" (often called "hen's nest") or in broom-sedge, according to the amount of fertility left in the soil when it ceases to be cropped. If very poor, the poverty grass first takes possession, then broom-sedge, and afterward pines. The length of time it takes these worn soils to recuperate depends largely upon their original fertility and the nature of the subsoil, and if the underlying rocks are of the character to disintegrate slowly under the action of the atmosphere, rains, heat and frost, recuperation will be faster than where such agencies are wanting, the softer rocks, micaceous and feldspathic, yielding more readily to the action of the elements than the harder ones of the gneissoid, hornblendic, and granitic group. About ten years' growth of pines and other plants will restore these old fields to a moderate condition of fertility, if this growth is cut down and allowed to rot on the land.

Requiring clean culture, this crop exposes the soil for a long period to drenching rains, which injure the land, one year with another, fully as much as the abstraction of fertility by the tobacco plants. Nevertheless, with proper care, lands can be readily improved by a rotation of tobacco, wheat, clover, etc. Wheat succeeds better after tobacco than after corn, even when the manuring and cultivation of the preceding crop are the same. It is the received opinion that tobacco is less exhaustive than corn, much less than sorghum, and about as exhaustive as cabbage, beets and potatoes.

VARIETIES OF TOBACCO.

The types and grades for which any given district or section is especially noted depend not so much upon variety as upon peculiarities of soil, methods of cultivation, and subsequent management in the curing processes.

MIDDLE DIVISION.

GOOCHLAND.—The variety mostly planted is Orinoco, making the finest grades. White stem is also grown, which is not so liable to be eaten by the horn-worms, because it is coarser and tougher, but does not sell so high as the Orinoco.

HANOVER.—The varieties generally cultivated are the Broad and Narrow Orinocos—the latter noted for its small fibers and delicate flavor. The Narrow Orinoco is probably the same as is known elsewhere in the sun- and air-curing district as Little or Sweet Orinoco. The Johnson-Green is also grown to some extent; it is stronger in flavor than the Orinocos, and is preferred when the product is intended for strips or shipping leaf. Single leaves of this variety have been known to weigh two ounces when cured.

BUCKINGHAM.—The Broad and the Narrow Orinocos are used for both shipping and manufacturing. One peculiarity of the White Stem is its difficulty of curing to a uniform color, it being liable to have green streaks if cured too hastily, or white stems and fibers if cured too slowly. The Medley Pryor is preferable for rich lands, and being a late variety, it does not always ripen, but when well matured it is sought by purchasers for manufacturing. Nicely handled, it makes the finest bright shipping, and brings high prices.

CUMBERLAND.—The planters raise Orinoco, White Stem, Frederick, dark, rich and heavy, and Medley Pryor. The dark tobaccos, which are mostly cultivated in this county, are intended for export.

AMELIA.—Formerly the White Stem was almost universally planted. The leaves are long and fibrous, of rapid growth; top leaves sweeping the ground, and, for that reason, often ragged at the ends. Recently the Medley Pryor has been preferred.

APPOMATTOX.—Orinoco and White Stem are the principal varieties.

DINWIDDIE.—Orinoco is now generally grown. White Stem and Long Green are grown for quantity rather than for quality, and are popular with rough managers. Blue Pryor and Silky Pryor are favorites with careful planters, the latter variety being disposed to cure bright.

CHARLOTTE.—The Yellow and the Medley Pryor are cultivated for the continental market; the Big and Little Orinocos for the home trade principally, for fillers and wrappers; Long Green for English shipping. The Yellow Pryor is capable of filling a greater variety of uses than any other kind, readily adapting itself to variations of soil and of cultivation, and will make bright wrappers as well as the best grades of dark and mahogany wrappers for the Austrian and Italian markets. Long Green makes a coarse, heavy, rich tobacco, and yields more to the acre than the others.

LUNENBURG.—Planters raise Blue Pryor, Yellow Pryor, Orinoco, Medley Long Leaf (a very broad leaf, but late) for shipping and dark wrappers; Wells (short, broad leaf, early), for wrappers; One Sucker, Spread Eagle (large, broad leaf, resembling, though not identical with Blue Pryor), Caswell (leaf medium size, and cures a bright color, and used for bright wrappers and smokers), and White Stem.

PITTSYLVANIA.—The Little and the Big Orinocos are most cultivated. Spotted Pryor is raised by some, grows rather larger than Orinoco, is of fine quality, yellows well on the hill, but is several weeks later in maturing than the Orinocos, and is therefore not desirable except for early plantings. Gourd Leaf, a new variety, is rapidly coming into favor. This variety has a large, fine, silky leaf, broad but short, yellows on the hill better, and is more easily cured than any other variety. White Stem, Bull-face, Scruggs, Gray Pryor, and Frederick are also grown for shipping.

HALIFAX.—For fancy wrappers and smokers Yellow Orinoco, Gooch, Gold-Leaf, and White Stem are grown. Little Orinoco is best for plug fillers; Medley Pryor, Big Orinoco, and White Stem for export.

MECKLENBURG.—This county produces Orinoco, Pryor, and Gooch.

BRUNSWICK.—Orinoco, Blue Pryor, Long Green, and White Stem are preferred. Most of the tobacco grown in this county is for export.

GREENSVILLE.—Orinoco is generally preferred. Cotton and peanuts are taking the place of tobacco in this county, very little of the latter being now cultivated.

PIEDMONT DIVISION.

ALBEMARLE.—Orinoco and Pryor are preferred for new grounds and the lighter soils, upon which they produce fine grades of light-colored tobacco. White Stem is generally planted.

GREENE.—Orinoco, Green, Frederick (elsewhere known as Bull-face), Pryor, and Long Green are all planted.

AMHERST.—Pryor, Orinoco, White Stem, and Bull-face are grown.

BEDFORD.—Broad Orinoco and Little or Narrow Orinoco are the varieties produced.

HENRY.—In this county there are two varieties in general cultivation: Broad Leaf or Big Orinoco, and Narrow Leaf or Little Orinoco, sometimes called Brittle Stem, and by some Flannagan, the favorite with the manufacturers of plug chewing. Though very much like the Little Orinoco of the Middle division, the Flannagan is evidently a distinct variety, produced possibly by hybridizing the Little Orinoco, or changed in habit and character by selection and culture. The leaf is broader and the fiber finer than the Little Orinoco, while it is equally as sweet, silky, and tough as that old favorite. White Stem is not much grown. This is evidently not the White Stem of the dark shipping district, but probably a hybrid Orinoco, called in some places White-stem Orinoco.

BLUE RIDGE DIVISION.

FLOYD.—The only variety produced is Yellow Pryor.

VALLEY AND APPALACHIA DIVISION.

ROCKBRIDGE.—Orinoco, White Stem, Blue Pryor, Bull-face, Cotton Boll (a large, heavy-leafed tobacco of vigorous growth, a favorite for export), Gray Pryor, and Yellow Pryor are raised.

BOTETOURT.—Bull-face, for which the local name Little Frederick is a synonym, Yellow Pryor, and Orinoco.

GILES.—Yellow Pryor, Brittle Stem, White Stem, and Orinoco are produced in the county.

CROSS-FERTILIZATION.

The Johnson-Green variety is a hybrid of Orinoco and White Stem. The White Stem itself is a hybrid; so is the Gold Leaf, a cross of the Yellow Orinoco and the Yellow Pryor. The Gooch, Flannagan, and Mayo are all hybrids of more than ordinary merit, and are said to be superior in many respects to most of the old varieties. The Medley Pryor originated in Halifax county sixty or seventy years ago with Mr. Isaac Medley, a successful and observing planter, and is a cross of the old Blue Pryor on the Orinoco, partaking both of the symmetrical habit of the Pryor and of the fine texture and body of the Orinoco. In the estimation of some of the best planters in Virginia, this hybrid has no equal in the production of a first-class export leaf or dark wrapper. Some attempts have been made here and there to obtain new and better varieties by crossing such as possess desirable characteristics, and generally much care is taken to maintain the purity of the seeds of favorite sorts.

INFLUENCES OF SOILS UPON THE QUALITY OF THE TOBACCO PRODUCT.

Soils have a material influence on the quality and color of most varieties of tobacco, gray soils being best suited to the yellow varieties, and dark, rich soils to the shipping. In general, the color of the soil is indicative of the color of the product, its fertility being indicative of the quality of the crop grown thereon. Rich clays of any color will produce a heavy, waxy leaf, if planted to a suitable variety—one that has a tendency to grow thick, leathery, and large. Gray, porous soils will develop a thinner but finer leaf, particularly if planted to those varieties that have grown on such soils for a long series of years and have been kept pure.

Varieties which produce an excellent quality of tobacco on soils to which they are suited fail entirely when planted on lands of a decidedly different character. For instance, the White Stem, which in Buckingham county produces a grade desirable for stemming and English shipping, on new lands in Albemarle county produces a large plant, with long and broad leaf, but so deficient in body, texture, and waxiness as to bring it under the nondescript class. Yellow Pryor and Orinoco, grown upon rich old lands, especially if manured, will yield a strong, dark tobacco, while upon light, new lands the product of the same varieties is yellow, fine-flavored, and sweet.

If tobacco of the same variety be planted on lands contiguous, of the same formation and character, as nearly of the same topography and fertility as possible, one field freshly cleared from the forest, the other long cleared but well preserved, the product of the first will be brighter in color when cured with artificial heat or by the sun and air, finer in texture and sweeter in flavor, and have less nicotine than that produced on the old land. This applies to the manufacturing grades and types. If both the new and the old land be planted in Medley Pryor, and cultivated, cured, and managed for dark shipping, that produced on the old land will be richer, heavier, darker, and stronger than that from the new land, and will sell higher in the market.

The product of new or fresh lands, if planted to the variety best suited thereto and properly cured and managed, commands more money generally; but if these new lands are red, and otherwise unsuited to the manufacturing types, the product of old rich lots makes the more desirable staple. To get the best returns from both the planter must choose the variety suited to the soil according to the type in demand, and cure and manage accordingly.

Some varieties grow to perfection on certain localities; while others, possessing a wider adaptability, succeed well on both rolling and level lands.

The Orinocos, Gold Leaf, Gooch, Mayo, and other yellow varieties grow to highest excellence only on rolling lands, requiring a dry, warm, quick soil, a porous subsoil, and thorough drainage.

Lands nearly level can be better plowed and cultivated, hold manure better, and can more easily be made rich. On such the Medley Pryor, White Stem, Frederick, Bull-face, and other dark varieties succeed best. The same varieties on rolling lands are finer in texture and brighter in color than when raised on level fields.

Tobacco of first-rate quality may be raised on lands so hilly and steep that they cannot be plowed, and where the hand-hoe alone can be used to cultivate the crop. As an economical method to bring such lands into cultivation and to get them seeded down to grass nothing excels tobacco as a first and a second crop to kill out the remains of forest growth; for any crop which the soil is capable of producing will do well after tobacco.

The adaptation of soils to certain varieties is not well understood. The yellow varieties are grown to greatest perfection on the feldspathic, micaceous, and slaty soils, all siliceous, gray in color at the surface, and yellow, running to red, in the subsoil. The dark varieties do best on rich, black alluvials, or heavy clays.

PRESENT QUALITY OF VIRGINIA TOBACCO.

As compared with the product ten years ago, the tobacco grown in most sections of this state has deteriorated in quality, but in a few counties there has been a marked improvement.

The agricultural depression, low prices, and the scarcity of skilled labor have discouraged farmers; less fertilizers are used; less pains are taken, and the condition of the soil has been steadily declining for several years. The old "hands", trained in the operations of priming, topping, assorting, and the various details of cultivation and management, are dying out, and the younger generation is decidedly inferior to the old as trained and skilled laborers.

The prices received for a few years past have been scarcely sufficient to meet the cost of production, while the area of production has been reduced. The endeavor has been to reduce the cost of production rather than to increase the value of the product.

In Goochland, Caroline, Louisa, and Hanover counties of the Middle division, north of the James river, there has been a general improvement of quality, farmers having been stimulated by the wide difference in prices between the low and the high grades. In some portions of Hanover county the quality has depreciated, especially the product of the sandy plateau, but in Louisa county some of the colored planters are raising the finest sun- and air-cured tobacco.

In Buckingham, Cumberland, Amelia, Appomattox, Charlotte, Mecklenburg, Brunswick, and Greensville, all south-side counties, the quality of the general product has materially deteriorated, although the most careful planters are raising a better article than formerly. Too much poor land is put in tobacco, and there is too much disposition to rely upon commercial fertilizers, to the neglect of yard and stable manures. Tenants, the majority of whom are negroes, raise, as a rule, an inferior grade, which is forced into market through local dealers in an unfit condition. In Lunenburg tobacco raised by experienced farmers has increased in quantity per acre and improved very much in quality. The bulk of the crop of this county, however, is grown by colored people, inexperienced and unskilled, who pay but little attention to the management of their tobacco. In Dinwiddie the quality of the crop has improved. Farmers are making more domestic manures, and are studying more carefully the needs of the tobacco-plant, and there exists a spirited rivalry among a large number of planters as to who shall raise the finest tobacco and get the best prices. In Pittsylvania the quality has greatly improved in the last ten years, owing to improved methods of handling and curing, as well as to better cultivation and management of the crop in the field. In Halifax county there has been considerable falling off in the quantity and in the quality of dark shipping grades; but now planters are attempting, with fair success, the production of bright grades.

In Greene, Franklin, and Henry counties of the Piedmont district the quality of the general product has improved, the curing being better on account of improved processes, and planters are stimulated to attempt the production of the finer grades by the higher prices. In Amherst and Bedford counties quality appears to vary to some extent with the seasons. If prices are good and the seasons favorable, there is a disposition to overcrop, resulting in an inferior quality from want of proper care: prices decline; there is a falling off in production; a shorter crop, more care, a better grade, and better prices. The tobacco buyers of Lynchburg claim that the quality of Bedford county tobacco has deteriorated very much, and express the opinion that this is caused by the use of commercial fertilizers. Although the tobacco is large and leafy, it is said to be light and chaffy as compared with the former product.

In Floyd and the other counties of the Blue Ridge district the product has improved.

In Rockbridge, Botetourt, Craig, and Roanoke counties, of the Valley and Appalachia districts, there has been some improvement in quality, and more attention is paid to curing, assorting, sizing, packing, etc. The tobacco of Montgomery county has improved. In Giles, Pulaski, Bland, Tazewell, Russell, Scott, and Washington counties the culture of tobacco is comparatively a new industry.

PROPORTIONAL ACREAGE IN TOBACCO.

In the Middle and Piedmont districts about 6 per cent. of the arable soil of the tobacco district is planted in tobacco; a larger percentage on the small farms and smaller on the large farms. A farm with 100 acres or less of cleared land may have from 5 to 10 acres in tobacco, while it is not uncommon to find one of 1,000 acres near by with only 30 to 50 acres planted to that crop.

The percentage is larger in the yellow than in the dark belt. In the yellow belt planters sometimes make a specialty of tobacco and raise but small crops of the cereals, devoting their efforts mainly to the money crop. A majority, however, attempt to make their farms self-sustaining by raising enough of home supplies.

In the Valley counties, extending from Rockbridge to Washington, tobacco is not a staple crop, except in Rockbridge, Botetourt, Roanoke, and Montgomery. In these counties the area occupied varies from 2 to 5 per cent. of the cleared land. This section is just beginning to develop the capability of its soils to produce a staple of high grade.

Of freshly-cleared land the proportion planted to tobacco in the dark or shipping belt varies from 10 to 40 per cent.; in the bright yellow belt, from 15 to 50, with occasional instances of 100 per cent.; in the Valley, from 8 to 30 in the eastern to 75 per cent. in the southwestern section.

South Middle and Piedmont Virginia still retain much original forest. Of these wooded lands fully nine-tenths is adapted to the production of tobacco. Beside the forests, there are in this territory large tracts grown up in old-field pines and brush, capable, when cleared, of making the finest kinds of tobacco, especially the yellow and the filler types.

The varieties of forest growth on preferred tobacco soils differ somewhat in the several belts. In the dark belt, hickory, dogwood, red-bud, poplar, walnut, beech, and oaks indicate a good rich soil; in the yellow belt, white and post oaks, hickory, dogwood, pine, maple, chestnut, whortleberry, etc., are found on lands adapted to the manufacturing types; and in Montgomery county an isolated section, covered with pine, sugar maple, beech, hickory, buckeye, etc., is well suited to the yellow types. The forests on the mountain slopes of the Valley consist for the most part of pine, oaks, maple, and hickory; on the lower and limestone lands, of walnut, varieties of the oak, poplar, buckeye, etc. In this portion of Virginia a much larger proportion of original forest is standing, but owing to the rugged and mountainous character of large tracts of land not more than three-fourths of the uncleared soils are adapted to the culture of tobacco.

During the past ten years the yield per acre has not materially decreased or increased in the greater portion of the tobacco belt. A decreased product per acre is general in the south-side counties of the Middle division, except in Buckingham and Dinwiddie, where the average yield has been somewhat increased by improved culture and more liberal manuring. In Piedmont the quantity produced per acre has increased to a considerable extent, in Greene county especially, the more careful planters having improved their lands by judicious rotation, in which clover is an important factor, and by a liberal use of fertilizers. In Botetourt county, of the Valley district, the increased yield has been from 20 to 30 per cent., mainly due, as is claimed, to the use of commercial manures of good quality.

Various rotations in connection with green-manuring and other fertilizing are practiced, with a view to recuperate worn soils and maintain the productiveness of the lands. Throughout the dark-shipping and air-curing districts the mode usually practiced by the most successful farmers is to sow wheat after tobacco and follow with clover, to stand one or two years; then rotate as before, applying domestic or commercial fertilizers, or both, to the tobacco crop, which helps the succeeding wheat and rarely fails to secure a good crop of clover. This is called the "lot system", and is the prevailing one. Another rotation is tobacco, wheat, and clover two years; then corn, followed by wheat or oats; then clover again.

Clover, following close after a tobacco crop, properly manured, thrives on most of the soils of the Middle and Piedmont divisions, and the acreage of this best of all plants for green-manuring is annually increasing.

In the Valley district substantially the same rotation is followed—the grasses, sometimes alone and sometimes mixed with clover, following wheat, preceded by tobacco.

Green fallowing is but little practiced in the yellow tobacco district, a green clover fallow, beside bringing an unwelcome army of cut-worms, being unsuited to the production of this variety of tobacco, the plant being too coarse and ripening with too green a color, and being, therefore, difficult to cure properly. This is true also of tobacco grown after wheat, as only on fresh gray lands and old fields, or following corn, will the product possess the requisites for the yellow type.

An application of ashes and plaster, at slight cost, will produce a luxuriant growth of pea-vines on land so poor that it will not yield five bushels of inferior corn per acre. Yellow tobacco may be grown on a pea-fallow to great advantage by the use of commercial fertilizers without detriment to color.

THE USE OF FERTILIZERS: HOW APPLIED—QUANTITY AND COST PER ACRE.

The use of commercial fertilizers has largely increased since 1870, and in every neighborhood of all the counties of Middle and Piedmont Virginia manufactured manures or guanos are purchased annually by tobacco planters, often by those who seem to be utterly careless of the home-made article. The ease and rapidity with which these fertilizers are put into the soil is strong recommendation for their use; and, when honestly compounded, they return a fair profit upon the amount invested in their purchase In Goochland and Louisa counties from 70 to 80 per cent. of the tobacco crops are fertilized with special manures, using from 150 to 300 pounds, either in the hill or in drills, at a cost of from $3 to $9 per acre. In Caroline more farm manures are used in connection with the commercial fertilizers. In Hanover it is the practice of some excellent farmers to plow in 12 to 15 cords of yard

and stable manure and use in the hills or drills about 150 pounds of one of the tobacco compounds, this preparation of the soil costing not much less than $15 per acre. These farmers think that commercial fertilizers alone do not produce perfect tobacco.

In all the tobacco districts of south-side Virginia the use of commercial fertilizers is general. In some of these counties no special efforts seem to be made to save and utilize the bulky but valuable accumulations of the farm-yard and stables, and too much reliance is placed upon the numerous special manures sold as tobacco fertilizers. In Halifax home-made manures from the stables, hog-pens, farm-yards, hen-house, etc., are hauled on the land in the spring and plowed in at the rate of from five to twenty wagon-loads per acre, according to the quality and kind of manure. This goes over from one-half to two-thirds of the land to be planted, the balance being supplied with commercial fertilizers, at a cost of from $3 to $10 per acre. In the remainder of the south-side counties this practice is followed more or less. From three-fourths to nine-tenths of the lands planted in tobacco are manured with either domestic or commercial fertilizers, at a cost varying from $3 to $12 per acre.

In Piedmont substantially the same practice is general. Superphosphates, ammoniated superphosphates, bone meal, kainit, guanos, and numerous "tobacco compounds" are used in hills or drills, and sometimes broadcast, as the experience or the fancy of the farmer may direct; sometimes alone, but usually as an addition to a previous application of home manures, and, more rarely, composted with stable manure. The quantity of commercial fertilizers used varies from 150 to 500 pounds per acre.

In the tobacco counties of the Middle division north of the James River the increase of yield, where commercial fertilizers alone are used, is from 20 to 50 per cent., and in combination with a liberal dressing of farm manures the increase is from 25 to 80 per cent.; but on the poor sandy soils of Hanover tobacco cannot be raised without the help of guanos or other nitrogenous fertilizers. It is the common opinion in this section that the use of commercial manures has not improved the quality of the product.

In the south-side counties, where the use of commercial manures is general, the quantity of the product is increased from 25 to 200 per cent., according to the soil, its previous condition, and the greater or less quantity of such manure applied. Many of the "tobacco compounds", containing, as the manufacturers claim, certain constituents especially adapted to the needs of the tobacco-plant, prove of little value, either because of insufficient quantity, injudicious application, bad management, unfavorable seasons, or the want of real value in the fertilizer itself.

In the Piedmont counties the use of fertilizers in generous quantities has increased the yield from 25 to 100 per cent.; but the quality of the product is somewhat inferior. As fertilized crops ripen earlier, some advantage is thus obtained.

In the Blue Ridge district, and in Botetourt, Roanoke, and Montgomery counties, of the Valley, commercial fertilizers are found to increase the yield quite as much as elsewhere—from 25 to 75 per cent.—and it is claimed that the quality of the tobacco is improved from 10 to 20 per cent. by their use. In the other counties of the Valley very little tobacco is grown, the small amount planted being usually on new lands, rich enough to produce good crops without manures.

As a general thing, concentrated fertilizers of real merit pay better in the yellow belt than anywhere else. They hasten growth and ripening, and contribute, when of the right materials, toward yellowing the plants as they mature on the hills. For heavy, rich, dark tobacco, no manures have met the requirements so completely as that of the farm-yard and stable.

DETERIORATION OF TOBACCO SOILS.

North of the James river fresh soils sufficiently fertile to produce one good crop of tobacco will produce a second of fair quantity; but if further cropped will deteriorate rapidly, and soon fail to repay cultivation. The usual plan is to follow the second crop of tobacco, grown on new land, by wheat, seeded to clover, under which system the land improves. Old lands planted to tobacco are always manured.

In south-side Virginia heavy alluvials withstand the effects of repeated cropping in tobacco for some years without great loss of productive capacity; but the light, gray soils, so well adapted to the growing of bright yellow tobacco, deteriorate rapidly unless fertilized every year.

In Piedmont the deterioration of tobacco lands is estimated as high as 15 per cent. per annum, especially the light soils on the rolling uplands and slopes. This damage is more than half the result of surface washing, and can be prevented, in great measure, by careful tillage.

PREPARATION OF LAND FOR TOBACCO.

The usual mode in preparing old land for tobacco is to turn the soil with two-horse plows 5 to 8 inches deep in the fall or winter; but this work is done from September to April, as opportunity permits. New land is first cleared of all brush, grubs, and trash, making the surface as clean and free from obstructions as possible, and is either broken with the turn-plow, if practicable, or plowed closely with the common colter, or with the implement known as

a "jumping colter". Subsequent plowings are various, as the condition of the land or the implements at hand will allow. For tobacco, perhaps more than for any other field crop, thorough pulverization of the soil is absolutely necessary, not only to make the subsequent cultivation rapid and easy, but to bring the whole body of soil into such condition that plant food can be readily appropriated by the fibrous roots of the plants.

Subsoiling is practiced to some extent, with varying results, in all portions of the tobacco region, the successes and failures being of nearly equal number; but there is no record of injury to the land where the subsoil plow has been used with judgment.

Experience has demonstrated clearly the benefit of subsoiling on red lands underlaid with stiff clay. The ground, when this operation is in progress, should be so dry that the subsoil can be readily pulverized; and the work should be so managed that the stratum of subsoil subjected to the operation shall be thoroughly broken, but be left in its original position. If two or three inches or less of clay subsoil be thrown to the surface by an improper use of the turn-plow, the field so treated must lie some years before it is restored to its former productiveness.

The tobacco-fields, having been broken the preceding fall or winter, are again plowed as early in the spring as the condition of the soil will permit, a third and sometimes a fourth plowing being necessary to put the land in first-class order. These spring plowings are usually done with the double-shovel or other cultivating implement, and frequently it is necessary to use the harrow, or a drag of some form, to break down the clods and fit the soil for subsequent operations. When farm manure is applied, the most approved plan is to haul it upon the land previously broken during the months of March and April, broadcasting it upon the surface, so that it may be thoroughly incorporated with the soil by the repeated plowings and harrowings which precede the immediate preparations for planting.

When the farmer has failed to break tobacco land until spring the various operations of plowing, manuring, replowing, and cultivating follow in the same order; but there is greater difficulty in securing fine tilth. In some instances, upon old clay lands, it has been found best to break in the fall with colters, running close, but without turning under the surface soil. This method is also adopted by many good planters in the preparation of newly-cleared lands, where there is but little sod.

If the farm-yard manures applied in the early spring are finely broken, so as to be readily and evenly distributed upon the surface, the double-shovel, or some form of cultivator, is used. Should the manure be coarse, strawy, and lumpy, repeated harrowing or dragging is necessary to prepare the surface soil for subsequent cultivation.

In May, when the plants are ready, the soil is prepared for planting, the methods differing as required by the condition, locality, or situation of the land. In Hanover, Spotsylvania, and adjoining counties it is the practice to mark off the land with a shovel-plow, drill the fertilizer in the furrow, "list" by two furrows of a turn-plow, rub down the ridge with a block or board, and plant. The usual distance between the rows is 3 feet 6 inches, with the plants set at the same distance in the row; but this varies with the fertility of the soil and the variety of tobacco to be grown. In Buckingham and other south-side counties it is usual to bed upon the fertilized drill and make flat hills with the hand-hoe, chopping the earth finely and marking the position of the plant by a pat of the hoe; but in Henry county the approved plan is to cultivate just before planting, "check" the land, and make a small, flat hill in each check. This plan admits of plowing both ways, and is preferable on rolling lands, the direction of the rows, and the choice between the two methods of simple rows or planting in checks, being determined by the locality and the greater or less liability of the soil to wash.

SEED-BEDS.

It is the practice of many careful planters to select beds for forward plants on the hillsides and suitable localities on low or flat land to secure a continued supply of plants.

The time of sowing tobacco-seed south of the James river, in middle Virginia, is January and February; north of the James river, in February and March. On the upper south-side, in the yellow belt, many planters commence sowing in December, especially in the counties of Halifax and Pittsylvania, and in the Valley the sowing rarely begins until after the middle of February. The date of transplanting depends upon locality, and upon the supply of plants and the season. The south-side planters commence about the 10th of May; on the north side, from the 15th to 20th of May; in the Valley, near the 1st of June, if the plants are in supply and the hills are sufficiently moist.

Most planters prefer large plants for old land, and for late planting, on any soil, large stocky plants, with good roots, are best. Small plants, set early in the season, generally do better than larger ones set late. As new lands are better adapted to the manufacturing types, they are generally prepared sooner than the old lands, and small plants are used by preference. There is an old adage, "A bud in May is worth a plant in June."

The plants are set in hills or drills, as suits the convenience of the planter, at the rate of from 4,000 to 5,000 plants to the acre, and sometimes as many as 6,000. Planters in the shipping belt give most distance between the plants, those in the yellow belt, preferring fineness of leaf to body, planting closer.

The general practice is to plant after a rain; but when the season is growing late, and plants are getting overgrown in the beds, the hills are watered and planted. This is more extensively done than formerly, especially on lots

convenient to water. When necessary to do this, a sharpened stake, 3½ or 4 feet long and 2 inches in diameter, is thrust into the hill 3 or 4 inches deep. Two or three quarts of water are poured into each hole, and as soon as the water settles the plant is stuck, the earth closed around the roots, and the plant shaded with leaves, grass, weeds, or by a clod. This is a tedious and costly work.

CULTIVATION OF TOBACCO.

As soon as the plants are well established the work of cultivation is begun, and the usual method is to run a light furrow with a small turn-plow or light shovel on each side of the row, throwing the earth from the plants. The hills are then scraped down or "skimmed" with the hoe, this being followed immediately by a close, deep plowing with a colter and slight hilling with the hoe. The middles of the rows are then thrown out with a one-horse turn-plow, and the hills again dressed by pulling up a little more earth about the plant, these operations being so timed as to keep ahead of the grass. One deep plowing about the time the leaves are as large as the hand is considered of prime importance, especially upon old and rather heavy lands.

In some localities in the valley of the upper James river the land is not ridged or "listed"—merely harrowed and leveled. The field is then rolled, marked, and planted, the after culture being level, with little need for hand work. This method is not admissible except on dry, porous soils. The tobacco-plant is impatient of an excess of moisture about the roots, and is quickly injured thereby.

When tobacco has been planted on the check system the cultivation is as follows: First, run cultivators each way as soon as plants are rooted, chopping around the plants with hand-hoes; second, run shovel-plow three times in the row, the last furrow in the middle, following with hoes, and putting a small hill to the plant; third, run turning-plows two furrows to the row, throwing earth toward the plants, finishing with a shovel furrow in the middle, and again hill up plants with hoes. Usually three plowings and as many workings with the hand-hoe complete the cultivation, and when the work is done at the proper time and in a thorough manner this is quite enough; but the labor is often much increased by suffering the grass and weeds to get the start of cultivation.

Old lands require more cultivation than new with both the plow and the hoe, and the shipping more than the manufacturing types.

TOPPING, PRIMING, AND SUCKERING OF TOBACCO.

Tobacco planted from the 20th of May to the 10th of June usually grows off promptly, and is ready for topping in from 35 to 50 days after transplanting, according to soil. Planted very early or very late, the intervening time is longer—from 40 to 60 days.

At each hand-working the "baby leaves", as the plant-bed leaves are called, and all other poor bottom leaves, are taken off. The final priming is done when the plant has formed at least eight thrifty leaves. Then the small bottom leaves are primed off, and the terminal bud, or "button", is broken out. In Hanover county the best farmers top to eight leaves, suckering beginning immediately after topping, and being continued until the tobacco is ripe.

In Amelia, Appomattox, and other south-side counties priming is commenced as soon as the plant will allow the ground leaves to be pulled off, so as to strip the stalk six or eight inches above the top of the hill or bed; then it is topped to eight, ten, or twelve leaves, according to strength of soil. If topped late, fewer leaves are left on the plant. It is the usual practice to top to ten leaves up to the 15th of July; after that date to eight leaves for shipping tobacco. For yellow manufacturing the plants are not topped until the "buttons" make their appearance, the custom being to prime high and top to twelve or fourteen leaves early, lessening the number as the season advances down to six leaves on very late plants.

It is a good rule not to commence topping in a field of tobacco until enough can be topped on the same day to fill a barn when ripe for harvesting.

In some parts of south-side Virginia, in Pittsylvania county particularly, some good planters do not prime, claiming that the lower and inferior leaves protect the crop leaves and secure a larger out-turn of cleaner and more salable tobacco.

Aside from the advantage of increased product (for it must be admitted that unprimed plants make greater weight), the advanced price paid for a clean staple of the best grade, made from the upper leaves, appears to decide this question in favor of those who do not prime.

In Piedmont priming and topping are usually done at the same time; but occasionally the topping is deferred a few days until the requisite number of leaves can be obtained, the number left on the plant differing with the type of tobacco to be produced—a greater number being left for bright manufacturing and a less number for shipping.

In priming, topping, and suckering great care is necessary to avoid bruising or breaking the leaves, especially those at the top of the plant.

CUTTING, HANGING, AND HOUSING OF TOBACCO.

In from forty to fifty-five days after priming and topping tobacco is ripe enough to cut, this interval between topping and ripening varying with locality, climatic conditions, character of the soil, healthiness and vigor of the plants and the peculiar management of the growing crop.

In the north-side counties of middle Virginia cutting begins about the 10th of September and continues until danger of frost, or about the 5th of October. A few planters think that tobacco is more pliant and works smoother when not quite ripe, but the majority of growers in this section prefer to cut when well ripened.

In Buckingham, Cumberland, and other upper south-side counties cutting begins about the 10th of September and continues until October 10 or thereabout.

In Pittsylvania, Halifax, and other counties near the North Carolina line tobacco is ready for cutting from the 20th of August to the 10th of October, from five to eight weeks after topping, according to season and other circumstances. The forward plantings are cut when fully ripe; the later, when the leaves are nicely yellowed. The finest wrappers from this section are from plants cut barely ripe, but for the smoking tobacco the well-ripened plants afford the best quality.

In Henry county (Piedmont) cutting begins about the 10th of September and continues until the danger of frost compels the finishing of the harvest. Tobacco cut fully ripe is not so bright, but makes a sweeter and better chew. In other counties of Piedmont, the Blue Ridge and Valley districts, the custom is to cut as soon as ripe, as the product is easier handled, and is esteemed of better quality, than when suffered to become too brittle by over ripeness.

As tobacco approaches the period of maturity, cool nights, without dew, retard growth and otherwise injuriously affect the plant; but when accompanied by heavy dews cool nights greatly aid in maturing the plant. Dews benefit the shipping much more than the manufacturing types.

If the sun is hot, and the tobacco heavy, cutting can be done safely after four o'clock p. m. At an earlier hour there is danger of sunburn while the plant is wilting, or of "coddling" after it is piled. On a hot, dry day, from eleven o'clock a. m. to four p. m., it is almost impossible to prevent sunburn. Tobacco should not be cut in the morning till the dew is off; but in cloudy weather, when there has been no dew, cutting can be continued all day with great advantage. Medium-sized plants can be cut during the greater part of a bright warm day if a little extra care be exercised in the handling and conveying to the scaffold or barn.

It is the common practice of Virginia tobacco-growers to split the stalk in cutting and harvesting the plants, the instrument most used being the ordinary tobacco-knife, resembling a small butcher-knife, with a blade about 5 inches long and 1½ inches broad, riveted into a wooden handle 4½ inches long; but knives of various shapes are used, the common shoe-knife being one. A patent knife, having a curved blade, and resembling a pruning-knife, with an exaggerated hook, made so as to sever the plants by a pulling cut, was introduced some years ago, but, being rather a dangerous tool, it has never been extensively used.

All tobacco split in cutting is hung upon sticks, varying in length to suit the distance between the tier poles of the barns in which it is to be housed, the usual length being 4½ feet, a majority of tobacco-houses having tier poles 4 feet apart. Three inches catch at each end of the stick is sufficient.

The Shelton hanger is used by a few planters, who pull off the leaves without cutting the stalk and string them on this hanger. This is constructed by passing a No. 15 wire through the middle of an ordinary tobacco-stick, twisting the wire twice on the upper edge of the stick and extending the ends of the wire to each end of the stick, the leaves being strung so as to hang alternately on either side of the stick, the latter thus supporting the wire and its load of leaves. By the use of this hanger more tobacco can be housed in the barn, the sticks can be placed closer together, and, if cured by artificial heat, less fuel is needed, and the process is completed in less time than when tobacco is cured on the stalks. It is used to great advantage in harvesting the ground leaves, but planters generally claim that the old process is the more expeditious for the main crop.

The number of plants placed upon a stick of the usual length, 4½ feet, varies with the size and type. For shipping, from five to ten plants, according to their size, are enough, if the planter desires to give plenty of room and not crowd the barn.

In the sun-curing belt the plants are not so large as in the shipping belt, but as no artificial heat is employed for this type it is always safest not to crowd too many on a stick. Eight medium-sized plants are enough; of large plants fewer; of small ones more may be placed upon each stick.

In the yellow belt only about six plants of medium size are put on each stick, and more or less as they are smaller or larger.

In the sun-curing district the tobacco, placed first upon scaffolds for from five to seven days, or longer, if the weather is favorable, is then placed in the barn. It is not fired if it can be avoided, but is allowed to cure by air alone. The best arranged barns for such curing are constructed with adjustable ventilators, to be opened in fair and closed in damp or rainy weather.

In the yellow district the practice varies. Some place the tobacco in the barn as soon as it is cut and hung, the two operations going on at the same time if the force is adequate. The sticks are placed well apart on the tiers,

regulating the plants on each stick as placed in position, so as to secure free circulation of the heat and prevent sweating and house-burn. The curing process is usually commenced as soon as the barn is filled, but some planters wait a few days before applying heat. Another practice, more rarely adopted, is to place the tobacco on scaffolds first. Still another mode is followed by a few planters, who place the tobacco in the barn as soon as it is cut and crowd it close on the tier poles, thus to remain two or three days to yellow, when it is opened. The sticks are placed at a suitable distance apart, and heat is applied. While each of the plans above described has its advocates, a majority of the most skillful and successful growers claim that the desired color can be more readily and certainly obtained on tobacco to which heat is applied as soon as cut.

In the dark tobacco district the harvest is conducted as follows: Two cutters cut two rows each, placing the plants, top down, upon the ground, the upper leaves forming a base upon which the reversed plant stands erect. A third man gathers the cut plants, placing the requisite number in piles for each stick. A boy follows the gatherer, dropping a stick at each pile. Two men complete this part of the work by hanging the plants upon the sticks, which are immediately carried to the scaffold or barn by carriers or on a wagon.

In the yellow belt a "stick-holder" follows two cutters, from whom the holder receives the plants as cut, places them upon the stick, which is passed, when filled, to a "carrier", who places it upon a wagon. For want of the necessary number of hands the sticks, when filled, are sometimes carefully laid upon the ground by the stick-holder, and the "cutting-team" assists in housing or scaffolding. When the force is adequate, and the tobacco is carried direct from the cutter to the scaffold, there is perfect immunity from sunburn, and the leaves are kept clean. When distance makes it necessary to haul from the field to the barn, crates, so constructed as to carry two tiers of sticks with the tobacco hanging at full length, are placed upon the wagons, by which means there need be no breaking nor bruising in handling.

Rough and careless handling prevails to a large extent, often causing damage to fully one-half the value of the product.

The broken leaves, of which there are very many in the heavy shipping tobacco, are either split with knives or are pierced with short, sharpened sticks, and strung upon ordinary sticks for hanging. A few use the Shelton hanger, already described. Some tie eight or ten of the green leaves closely with small willow withes, imbedding the tie deep into the pulpy butt stems, so that they may not fall apart when dried—an expeditious and economical method.

Frames of peculiar construction, on which tobacco hung upon sticks is carried to the barn and hoisted therein, so as to be rapidly placed upon the tier poles, have been patented, and are used to a very limited extent.

TOBACCO-HOUSES.

Most of these tobacco-houses are built of logs from 16 to 24 feet long. In the shipping belt there may be found many large and costly framed barns, while in the yellow district the houses are small, and are rarely built of other material than hewn logs.

A barn 20 by 20 feet, with five firing tiers, one above the other, in the body of the house, with additional tiers in the roof space, will hold from 700 to 800 sticks of shipping, or 600 to 700 sticks of tobacco to be cured by the air, or with flues, or charcoal fires. Such a house, 20 feet high in the body, built of good oak logs, hewn on the outside, boarded at the gables with heart weatherboarding, and covered with heart shingles, will cost from $80 to $110, according to locality and workmanship.

Framed barns are from 20 feet square to 30 by 60 feet, and their cost depends upon local cost of materials and labor. These barns are now being provided with flues, and are used successfully in curing both shipping and yellow manufacturing tobacco.

The small planters, among whom are found the most successful producers of the finest grades, prefer small houses, 16 to 18 feet square. These small barns can be quickly filled by a small working force; and it is claimed, with good reason, that the color can be fixed more readily in a small than in a large barn.

TOBACCO CURING.

The process of curing to be adopted by the planter depends upon the character of the tobacco as it comes to the knife. If of medium size, thoroughly ripe, of a yellowish green color, grown upon gray sandy or gravelly land, it will suit for fillers, and ought to be cured by sun and air; if of fine texture, smooth or dappled yellow on the hill when ripe or nearly ripe, properly cured with flues or charcoal, it will command good prices for wrappers and smokers.

The north-side counties (Caroline, Spotsylvania, Hanover, and Louisa) produce mainly sun- and air-cured fillers. After being scaffolded until the leaf is nearly cured, generally in from four to seven days, the tobacco is then removed to the house, where it hangs until cured. In unfavorable weather the tobacco sometimes gets but little sun, when especial care is given to prevent crowding, the sticks being placed far enough apart to keep it from touching, and dried without fire, unless in very damp weather, when it is fired very gently, to keep off mold. For

dark shipping tobacco the plants are carried to the house and hung as soon as cut, and, when the house is filled, slow fires are started. To cure red shipping the tobacco is allowed to yellow for a few days, either on the scaffold or in the house. That which has yellowed on the scaffold will require but two or three days of firing when housed; but that put immediately into the barn remains two or three days to yellow without fire, is then fired, and is cured in four or five days. Where the yellow manufacturing type is the principal product, flues and charcoal fires are used to cure nearly all the better grades.

Where heavy shipping tobacco is the leading product, with a small proportion of manufacturing tobacco, the shipping is mostly cured with open wood fires, and the new-ground manufacturing with charcoal. In firing with wood two logs of seasoned hickory or other hard wood are placed side by side under each tier, the fires kindled along between the logs, using small bits of wood to get the fires started.

In Albemarle, Greene, Amherst, and Bedford, counties of Piedmont, wood fires are mostly used in curing.

For curing bright yellow tobacco two modes are in use: one with charcoal, and the other with flues. The process is minutely described in the chapter on North Carolina, and is known as the Ragland method.

A barn containing 700 sticks of green tobacco, six medium plants on each stick, holds, along with the tobacco, from 4,500 to 5,000 pounds of water, which must be expelled in from eighty-five to one hundred hours.

Charcoal produces an open, dry heat, well suited for the purpose; but it is a costly fuel, its use tedious, dirty, and laborious, and it deposits a black dust on the leaf. With properly constructed flues of stone or of brick, covered with sheet-iron, or with furnaces and cast-iron pipes, wood is burned at little cost, the tobacco being cured free of dust, and having a sweeter flavor.

The following table shows the proportions of the product of the several counties, air-dried or cured by artificial heat, and the proportion of that cured by heat with open wood fires, or by charcoal and flues:

Counties.	Air-dried.	Cured with artificial heat.	Cured by artificial heat.		Counties.	Air-dried.	Cured with artificial heat.	Cured by artificial heat.	
			With open wood fires.	With charcoal and flues.				With open wood fires.	With charcoal and flues.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*		*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
Goochland	25	75	72	3	Powhatan	5	95	95	.....
Hanover	90	10	10	.....	Campbell	10	90	75	15
Caroline	90	10	5	5	Prince Edward	10	90	85	5
Louisa	95	5	5	.....	Albemarle	40	60	50	10
Fluvanna	40	60	56	4	Amherst	10	90	75	15
Amelia	50	50	40	10	Bedford	10	90	74	16
Appomattox	8	92	70	22	Greene	70	30	30	.....
Buckingham	5	95	92	3	Nelson	10	90	80	10
Brunswick	5	95	95	.....	Franklin	15	85	15	70
Cumberland	7	93	88	5	Henry	.....	100	.....	100
Charlotte	9	91	87	4	Patrick	8	92	12	80
Dinwiddie	25	75	70	5	Floyd	10	90	5	85
Greensville	20	80	80	.....	Giles	10	90	30	60
Mecklenburg	40	60	55	5	Botetourt	10	90	70	20
Lunenburg	12	88	82	6	Roanoke	8	92	70	22
Nottoway	10	90	85	5	Rockbridge	3	97	87	10
Halifax	25	75	30	45	Montgomery	8	92	12	80
Pittsylvania	8	92	15	77					

Planters who use charcoal burn it on their farms, if suitable wood can be had; others buy from parties who make a business of charcoal burning. The old-field pine makes a prime article of coal, gives off but little smoke in burning, and does not taint the tobacco with the taste of creosote, as does charcoal from many kinds of wood. Good charcoal sells at four to five cents per bushel, and is often delivered at the barn for the latter price. A barn 20 feet square, with five main firing tiers, filled with tobacco, will require from 120 to 130 bushels to cure the contents thoroughly. Many planters continue the use of charcoal, and claim for it certain advantages over the flue—that it cures better, and is safe—this opinion being probably formed by comparison with imperfect and wrongly-constructed flues, or those which have been ignorantly managed. Charcoal-cured tobacco holds its color well, possibly better than flue-cured; but this does not compensate for the extra cost.

LOSSES BY FIRE AND RATES OF INSURANCE OF TOBACCO-BARNS.

In the air-curing district the number of tobacco-houses burned annually is less than 1 per cent. of the whole; in the open wood-fire district, from 2 to 3 per cent.; and in the charcoal and flue-curing district, from 3 to 5 per cent.

In the shipping district, where open wood fires are used, the temperature of the house rarely exceeds 90°. Brights require very hot fires at certain stages of the curing processes, but nevertheless the larger proportion of losses by fire in flued barns is due more to defective construction and careless management than to the necessarily

greater heat. Now and then a planter, in order to cure quickly and make room for another filling, raises the heat unnecessarily high—to 200° or more—at which high temperature a spark is all that is needed to bring sudden disaster.

Responsible companies, home and foreign, are taking risks upon tobacco-houses, along with other farm buildings, but at higher rates, the average charge being 4 per cent. per annum; but for shorter time, higher rates, from 1 to 2 per cent. a month, are charged.

POLE-SWEAT.

Pole-sweat rarely occurs in the yellow belt, the mode of curing by flues or charcoal dispelling the excess of moisture. The free application of heat remedies the ill-effects of overcrowding to a great extent, but at the same time there is danger of scalding tobacco so crowded, darkening and deadening the leaf, making it almost worthless, and entailing much loss every year. Crowded tobacco requires slower firing, at a lower temperature, and can never be cured as bright as if placed far enough apart to permit free circulation of heat and air. In firing with flues or with charcoal a draft is kept up as long as the leaf is green by leaving openings over the furnaces, or by making vents in the walls of the house.

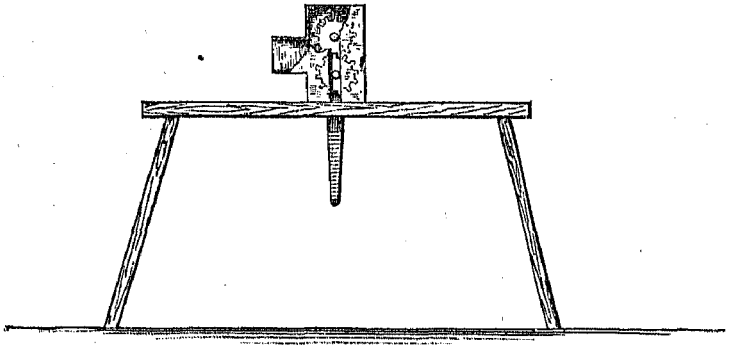
In the air-curing district lack of house room induces planters to crowd the barns too full, resulting in serious damage if the weather should be damp and warm during the curing season.

MANAGEMENT OF CURED TOBACCO BEFORE STRIPPING.

The curing process completed, tobacco is allowed to hang until both stems and stalks are thoroughly dry. When in the right condition, it is either crowded close upon the main tiers or into the roof of the barn, there to remain until taken down to be sold or stripped, or the tobacco is taken down, pulled from the sticks, and packed away in bulk. This bulk is built upon the floor of the barn, or other suitable place, upon a bed of tobacco-sticks. In some instances tobacco is bulked without removing it from the sticks, but not unless it is thoroughly cured, as otherwise there is serious danger of damage. It is of prime importance that yellow tobacco shall be kept from light, and in a dry place, to prevent loss of color.

MANAGEMENT OF STRIPPED TOBACCO.

Tobacco is often damaged after the processes of curing and stripping while hanging in the barn. In long-continued wet weather a fungous mold makes its appearance, mostly upon the bottom and outside tiers, especially in barns with defective walls or damp floors. There are two kinds of mold produced by excessive moisture in warm weather, commonly known as "white" and "yellow" mold, really only different stages of the same disease. White mold is the incipiency of decay, and yellow mold is an evidence that the tobacco is no longer fit for any grade but "nondescript". The white mold, if rubbed off as soon as it appears (and it comes off easily if taken in time), rarely leaves any disagreeable smell to the leaf; but the yellow mold cannot be rubbed off, and taints the leaf with an unpleasant flavor.



When sold in winter order, as is usual in some districts, tobacco is bulked down as it is stripped; but if it gets too "high" or soft in bulk, or if it is desired to sell it in shipping order, it is hung until spring, when it is again put in order for prizing or is bulked in good keeping order on a close floor, usually of a width to accommodate two courses of the kind of tobacco to be packed, long, short, or lugs. In some cases, if the tobacco is to be prized, it is hung up to dry thoroughly, and is then ordered for prizing, taken down, bulked on a platform 3 to 4 feet wide, laying three or four courses of bundles, and heavily weighted.

Shipping tobacco is generally hung up to dry out after being stripped and reordered before bulking for prizing. Manufacturing is largely sold loose, and most of this type is bulked as stripped, and either sold in "winter order" or hung up again and ordered to keep until sold. The safest way to bulk tobacco when stripped in winter or early spring is to "tail down" two rows with heads outward, tails slightly lapping.

In Henry county stripped tobacco is sometimes bulked down as stripped, but the general practice is to hang up. If bulked down, it is packed in parallelograms 5 by 10 feet, putting the darkest tobacco at the bottom, fine in the middle, and lugs on top.

A machine for straightening tobacco, invented by a citizen of Albemarle county, has been used to great advantage. This machine consists of a bench, supporting at its middle an iron frame containing two iron cylinders, working upon each other by cogs, with a crank handle fixed on one end of the lower cylinder. In each cylinder are four grooves an inch or more in width, completely filled with gutta-percha; also an iron funnel or hopper, with four partitions, through which the bundles of tobacco to be straightened are fed to the rolls, the bundles being delivered from the rolls perfectly straightened and flattened out. This machine saves much labor in bulking and rebulking tobacco, the only objectionable feature being the liability of the gutta-percha filling to wear out too quickly, and the consequent difficulty and expense of replacing it. (See illustration on page 208.)

Tobacco usually remains in bulk at least four weeks in the shipping district, where most of the product is bulked. In the yellow district much the larger part of the crop is sold loose, and it is bulked only for the purpose of keeping it in order for ready sale, as convenience, necessity, or interest may prompt.

BEST SEASON FOR PRIZING TOBACCO.

The summer months are best and safest for prizing tobacco; for then the warmth liquefies the vegetable oil in the leaf and it comes into "order"—a supple, pliant condition—without absorbing much moisture. Some of the very best "ordering" seasons come without a drop of rain, and a warm, humid south wind, condensing moisture upon the colder rocks during the night or early morning, brings an excellent ordering season, experienced planters, when they see the "rocks sweating", accepting it as a sign of a favorable time to take down their tobacco. A "coming" season is better than a "going out" season. The condition of the tobacco indicates to the practiced eye at a glance the one or the other, as in a "coming" or "quick" season the leaf is pliant, while the stem is dry and brittle, but in a "going out" or protracted season the tobacco shows that moisture has been absorbed by the stems, which are as pliant as the leaves. As it is important that the leaf should be pliant and the stem dry enough to crack full half way from the large end to be in *safe* order, the tobacco should be watched and taken down in that condition. Any slight moisture will then be absorbed by the drier stems, and fermentation in bulk or in the package be impossible.

If there are moisture and heat enough in the atmosphere, tobacco bulked or prized will go into "sweat". Thoroughly dry tobacco never sweats; nor can sweat be induced without heat. Some heat is developed in sweating, and if this is only to a slight degree the bulk will "sweat sweet"; if the heat is excessive, the tobacco is either ruined or greatly damaged. The duration of the sweating process depends upon the condition of the tobacco when bulked or packed, the temperature, and the type. Tobacco remaining in bulk through a second summer undergoes the same process of sweating, but to a less extent.

PREPARATION OF TOBACCO FOR MARKET.

When stripped from the stalk, tobacco is assorted into three grades: lugs, short leaf, and long leaf. It is then tied into bundles of from five to eight leaves of the better grades and eight to twelve leaves of lugs, bulked down and heavily weighted, is often rebulked twice, and finally it is prized into hogsheads, to weigh from 1,000 to 1,500 pounds of shipping or 700 to 1,000 pounds of manufacturing. In some counties a large proportion of the crop is taken to market loose.

Much attention is given by successful growers to the stripping, assorting, and packing processes; and it is not unusual to find bulks of tobacco in some of the finest dwellings in the region where the best grades of bright tobacco are produced.

The product of Albemarle, Amelia, Buckingham, a portion of Appomattox, Cumberland, Charlotte, Mecklenburg, Lunenburg, Hanover, Caroline, and some other counties, when prized for shipment, is mostly sold in Richmond; that of Amherst, Bedford, a considerable part of Appomattox, and the shipping tobacco of the Valley and Blue Ridge counties, is marketed at Lynchburg. A large part of the crop is sold loose in the various market towns of the sections in which it is raised, and finds its way thence either to the manufacturers or to the large markets, where it is assorted and prized for shipment. Of Henry county tobacco, about one-half is manufactured in the county and the remainder is marketed at Danville.

Tobacco hogsheads are about 54 inches in length, and from 38 to 44 inches across the head, and the price varies, according to the cost of lumber, from $1 25 to $2.

Half-hogsheads and tierces are more used in the yellow district. These are of all sizes, holding from 300 to 800 pounds, the cost varying with the size, material, and workmanship.

Dark shipping tobacco is prized to weigh from 1,200 to 1,600 pounds of leaf and from 1,400 to 1,800 pounds of lugs, and air-cured from 800 to 1,200 pounds. Yellow is always packed lightly. It injures the sale of this grade to prize so tightly as to stick the leaves together, as they should shake out loosely when opened.

In colonial days, and until 1800, or later, Virginia planters delivered their crops in market and sold before Christmas. From 1810 to 1830 the common practice was to prize and sell in the early spring or summer; but after that period, and until 1860, the greater part of the crop was sold during the summer months. Since 1865 an entire change in the time and manner of marketing has taken place, planters now selling their tobacco at any time during the year, as necessity may compel or prices induce. Most of the loose tobacco sales are made early in the spring, unless prices are very low.

Loose tobacco is sold in Richmond and in Petersburg during the winter, and in March and April; prized tobaccos are sent to these markets in the summer and fall.

In the up-country markets planters commence selling in a small way as soon as the tobacco is cured, disposing of lugs, primings, and poor leaf first and the better grades afterward.

Farmers in Henry, Franklin, and Patrick counties sell mostly to country manufacturers, who purchase for cash "at the barn door". What local manufacturers do not require is shipped or hauled to the nearest market.

LOOSE TOBACCO—HOW SOLD.

Warehouses for the sale of loose tobacco are of recent origin. In construction, arrangement, and fixtures they are very different from those in which prized tobacco is inspected and sold, being generally spacious structures, with ample floor room, abundantly lighted on either side and above, having covered ways for unloading tobacco from wagons, and most of them have accommodations for the teams and the drivers of the farmers' wagons.

On the arrival of a wagon loaded with tobacco it is driven upon the covered way, some three feet lower than the adjoining warehouse floor, and the tobacco is taken from it by the warehouse employés, assisted by the driver or owner, and is placed upon trucks in round piles, heads outward and tails to the center, until the truck is filled or all of any one grade is placed thereon. The loaded truck is run upon a scale platform and weighed, and thence to the proper place on the floor, where the tobacco is skillfully dumped, without disturbing the symmetrical packing of the pile. A card, with the appropriate warehouse number, name of owner or seller, and weight of the lot, is put into the cleft of a stick thrust into the pile, and as far as possible each grade, according to size, color, and quality, is placed in separate piles.

When the piles have been arranged upon the warehouse floor, at a given hour an auctioneer proceeds to sell at public outcry, beginning at the end of one of the rows of piles and disposing of each lot in turn until all are sold. The regulations in all such warehouses allow the owner to "take in" his tobacco if the price is not satisfactory, and he may again offer it at public sale or sell privately, at his option.

The charges for handling, selling, and delivering loose tobacco in the several markets of Virginia are: For receiving and weighing, per pile or lot, 10 to 15 cents; auction fee for selling under 100 pounds, 10 to 15 cents; over 100 pounds, 25 cents; commission for selling, 2½ per cent. In some warehouses a charge of 5 to 10 cents is made for delivering.

The buyers remove the tobacco from the warehouse as soon as the sale is over, large, flat-bottomed baskets, holding from 200 to 300 pounds, being used for this purpose, and care is taken to keep the several lots, as sold, separate, each lot retaining its appropriate ticket. This precaution is to prevent disputes if there should be any cause for reclamation.

In the up-country markets, when tobacco is received by rail or otherwise, in hogsheads, tierces, boxes, or crates, the packages are broken and the tobacco is sold loose in the same way as above described.

PRIZED TOBACCO—HOW SOLD.

In Richmond and Petersburg, where there are regular inspection warehouses, the hogsheads or other packages are first stripped off, the tobacco broken in three or more places, and samples are drawn from each break. The samples from each package are tied together, sealed, and stamped with the name of warehouse, number, owners' name, weight (gross, tare, and net), and date of inspection, and the tobacco is then sold, either at auction, on 'change, or at private sale.

The system of state warehouses, under the control of inspectors appointed by the governor, which existed for two hundred years has recently given place to free inspection, under rules and regulations adopted by trade boards or associations.

The average charges, to be paid by the seller, are: Storage, four months, per hogshead, $1; after four months, per month, 10 cents; inspection, 75 cents to $1; review, $1 50; commission for selling, 2½ per cent.; payable by the purchaser is a charge for outage of $1 per hogshead. The samples are guaranteed by the inspectors, and reclamations for non-conformity of package with sample are settled by committees of arbitration elected or appointed by the boards of trade.

With the construction of better barns, the introduction of flues or other means of applying artificial heat, and a better understanding of the processes of curing and handling, the quality of Virginia tobacco has been improved. In Pittsylvania county, for instance, tobacco skillfully cured with flues brings from $20 to $30 per hundred pounds, crop round; the same tobacco cured with charcoal, and with equal skill, sells for $15 to $25; while that cured with open wood fires in the old way, supplies a demand for lower quality at $4 to $10.

A still greater range of prices is found in the sales of manufacturing and smoking tobaccos, market values ranging from $5 to $75 per hundred pounds, this difference of prices being due almost entirely to different skill in curing and handling.

TOBACCO STRIPS.

Strips are not put up by tobacco growers, but by dealers and manufacturers in Richmond, Petersburg, Lynchburg, and Farmville. Some parties make this a special business, and the larger manufacturers make strips of such portion of their stock as is better suited for that purpose than for their own special line of goods.

Formerly only long, dark mahogany or red leaf was selected for strips; but the demand of late years for other types to suit the various export markets has greatly diversified the character of leaf used.

In making strips the loss of weight by drying is from 8 to 12 per cent.; by removal of stems, 18 to 20 per cent., and about 5 per cent. by waste—a total loss of weight of about 31 per cent. of dark leaf and 36 per cent. of bright tobacco, that purchased in winter order losing by drying much more than that bought after March.

Making strips is a large industry in Lynchburg. An account of the methods there employed will fairly describe those followed elsewhere.

Loose tobacco is taken to the factory and placed upon the floor of a room adjoining that in which the work of stemming is done, each lot or pilebeing kept separate as purchased, or, if want of space makes it necessary, several lots of the same grade, style, and quality are bulked together. The number of pounds of leaf needed to make a hogshead or a tierce of strips of a given grade is carried from the storage-room into the stemming apartment, sprinkled with water to soften, and heated in a steam-box, a few basketsful at a time. The bundles are then ready for the stemmers, the leaves being supple, pliant, and in such condition that the stems may be quickly removed without tearing the strips.

Stemming is mostly done by negro women, who are very dexterous at the work. They are assisted by children, who untie the bundles and place them ready for the stemmer, and straighten and tie up the stems. The stemmers tie the strips in bundles of moderate thickness, and are paid 50 cents per hundred pounds, weighed at the close of the day's work, thus earning from $2 to $4 per week. After the weighing is done, the stemmers are required to put the bundles of strips upon sticks (in which work they are assisted by their children) and to carry them to the drying-room to be hung up. Each lot intended for the filling of a hogshead or other package is hung by itself, the time required for drying varying from eight to twelve hours, according to the quality of the tobacco. The bundles dry more slowly at the ties, and care is necessary to insure perfect dryness throughout.

When the tobacco is thoroughly dry, the windows of the drying-room are opened to let it cool off—usually all night. They are then closed again, and soft steam is turned into the room through perforated pipes, so managed as to render the tobacco fit for handling. It is then carefully laid upon the floor in "coops"—one stick with tobacco overlapping another—and built up straight to a height of five feet or more, each coop containing one tierce, or two to make one hogshead. Here it remains two days, to cool off and toughen, when it is ready for packing. In the work of packing steam is again used to soften the tobacco, six or eight sticks of bundles at a time being carefully placed within the steam-box, the door of which is slightly closed, and soft steam being turned on for one or two minutes. The sticks are then carried to the packing table, opened, the bundles shaken out and straightened, and neatly packed with the least possible delay.

DISEASES OF TOBACCO AND INSECT ENEMIES.

The damage from diseases is rarely very great; still there is more or less loss every year, principally because of what is known as "red-fire". "Frenching," "walloon," "hollow stalk," and "white speck", all occur when soil or atmospheric conditions favor their development.

There are but two insect enemies whose depredations are seriously dreaded by the tobacco-planter—the flea-beetle, which attacks the seedling in the plant-bed, and the horn-worm. Cut-worms are sometimes troublesome upon sod lands, or upon clover leas planted in tobacco.

COST OF RAISING AND MARKETING TOBACCO.

The average value per acre of farms in the tobacco region may be estimated at $12. A good rich lot, suitable for tobacco growing, will sell for $25 to $40 per acre; but such lots are very rarely purchasable separate from the adjoining lands. The best soils will produce from 800 to 1,500 pounds, according to variety, cultivation, and management. Inferior lands are worth from $5 to $10, and produce from 300 to 500 pounds of tobacco per acre.

Lands are usually rented for one-fourth of the gross crops of all kinds produced thereon. In the few instances in which tobacco lots are rented for money the best soils bring from $10 to $15, and ordinary lots $5 per acre. Lots rented for one-fourth the crop of tobacco, in districts which produce the best grades, sometimes yield a rental of $100, and very often $25 per acre. Farms which contain a fair acreage of good tobacco soil are rented at from $3 to $5; ordinary farms at from $1 to $3 per acre, the rent paid depending upon the condition of the land, the fences, barns, etc., and the distance from market, as well as upon the productive capacity of the soil.

Field workers in tobacco are paid from $5 to $10 per month, with board; and by the day, in summer, from 40 to 60 cents, with board. Laborers hired by the year, or even by the day during the active season, are not employed exclusively in the tobacco-fields, and are not paid no higher wages than ordinary farm hands. Experienced curers, assorters, prizers, etc., are paid extra wages; but usually the farmer himself supervises the more important processes.

The cost per hundred pounds of tobacco, cured and ready for market, is variously estimated at from $5 to $8 for an average yield per acre. A poor crop costs proportionately more—often much more than the market value of the product. An estimate of the cost of producing yellow tobacco and flue-cured fillers may be stated as follows, the prices for labor and other expenses being the averages for the state:

Cost of seed-beds and seed, per acre to be planted	$1 00
Weeding, etc., plants in bed	1 00
Interest and taxes on land, $25 value	1 60
Twice breaking, at $1 50	3 00
Harrowing, marking, and hilling	3 25
Drawing and setting plants	2 00
Cultivating, three plowings, two hoeings	5 25
Topping, worming, and suckering	6 50
Harvesting and curing, with charcoal or flues	20 00
Taking down, assorting, stripping, etc	9 00
Bulking and prizing	4 50
Use of horse, wagon, tools, and implements	10 00
Delivery to merchant	2 25
Total cost per acre	69 35

This estimate covers the outlay for the production of a good crop upon good land with all the needed appliances for cultivation, harvesting, and preparation for market. The cost of ordinary cultivation may be reduced to as small an amount as $40 per acre; and that this sort of economy is much practiced is evidenced by the fact that the average yield for the state in 1879, as shown by the census, was only 572 pounds per acre.

Much the larger part of the tobacco produced in Virginia is cultivated on the "share" system, in some instances the proprietor furnishing the land, teams, feed for teams, implements, and house and firewood for the laborer and family, and receiving from one-half to three-fourths of the crop made, the proportion varying with the fertility of the land, variety grown, cost of curing, appliances, etc. If the tenant furnishes teams, implements, etc., the landlord gets from one-fourth to one-third of the crop. Sometimes "croppers" are employed by tenants, who receive for their labor one-half of the residue after the rental is paid. When fertilizers are used upon crops grown by tenants or croppers, the cost of such manures is deducted before the division into shares is made.

From two to three acres, 8,000 to 12,000 hills, can be cultivated by each full hand. Large areas of tobacco can be grown at less cost per acre only by the closest attention and careful supervision on the part of the planter; and, as a rule, small crops, well handled, are much more profitable, proportionately, than large ones.

There are no authoritative and reliable data from which to estimate the production, acreage, and value of the tobacco crops of the state during the three years preceding the census year.

A SUCCINCT ACCOUNT OF TOBACCO IN VIRGINIA,

HISTORICAL, AGRICULTURAL, AND STATISTICAL, 1607–1790, WITH SOME MENTION INCIDENTALLY OF ITS HISTORY IN MARYLAND, PREPARED FOR THE TENTH CENSUS OF THE UNITED STATES BY R. A. BROCK.

It is an unquestioned fact that tobacco reigns supreme among artificial stimulants in popular estimation. No sooner were its peculiar qualities made known than it was sought after with the greatest avidity, until now, after a lapse of a little more than three centuries since its introduction into civilized Europe, its use has become universal, the world yielding to its fascinations in one or more of the forms of its use, either as smokers, chewers, or snuffers. As many as forty varieties of the tobacco-plant have been noted by botanists, but one of them alone claims here our attention in its connection with our narrative, that designated by Linnæus as *Nicotiana tabacum*, and common to Virginia, to the material prosperity of which it has held the most important relation as a staple product from the first settlement as a colony. Among the aborigines of the continent of America, according

to Sir Hans Sloane (*a*) it was known as *petum*, while those who inhabited the islands called it *yoli*. Its several present modes of use were subjects of early observation. In November, 1492, the natives of Cuba were seen smoking it by the companions of Columbus during his first voyage to America, and in the narrative of the second voyage, in 1494, Roman Pane, the friar who accompanied it, examples the use of tobacco in snuff-taking. He uses the name *cogiaba* for the plant, which was its Hispaniolan name, but by other travelers it was spelled *cohiba*. It was known as *petun* in Brazil, and as *piecelt* in Mexico. Its use in chewing was observed by the Spaniards upon landing in Paraguay in 1503, the natives coming forth to oppose them beating drums, throwing water, "chewing herbs, and spitting the juice toward them." In 1519 tobacco is said to have been discovered near Tobasco, but the event is assigned to the next year. (*b*) In 1535 the negroes had already habituated themselves to its use, and had cultivated it on the plantations of their masters. Europeans likewise smoked it, and its use in Canada is mentioned by Cartier. In 1559 it was introduced from Saint Domingo into Europe by Hernandez de Toledo, a Spanish gentleman, who brought a small quantity into Spain and Portugal, and in the same year Jean Nicot, envoy from the court of France to Portugal, first transmitted thence to Paris, to Queen Catharine de Medicis, seeds of the tobacco-plant, and from this circumstance it was called *Herba Regina*, and, in honor of him, *Nicotiana*. In 1565 Conrad Gesner became acquainted with tobacco, and several botanists cultivated it in their gardens; the same year Sir John Hawkins carried it from Florida to England. (*c*) Hariot, who was with the expedition of Sir Richard Grenville, undertaken under the auspices of Sir Walter Raleigh, in 1584, and which resulted in the discovery of Virginia in 1585, makes this mention of tobacco:

> There is a herbe which is sowed by itselfe, and is called by the inhabitants *uppowoc*. In the West Indies it hath divers names, according to the severall countries where it groweth and is used; the Spaniards generally called it *Tobacco*. The leaves thereof being dried and brought to powder, they used to take the fume or smoke thereof, by sucking it through pipes made of clay, into their stomache and head.—*A Briefe and True Report of the New Found Land of Virginia*, London, 1588, p. 16.

William Strachey, the first secretary of the colony, wrote *circa* 1610:

> Here is a great store of tobacco which the salvages call *apooke*, howbeit, it is not of the best kind; it is but poor and weake; and of a byting taste; it grows not fully a yard above ground, bearing a little yellow flower like to henbane; the leaves are short and thicke, somewhat round at the upper end; whereas the best tobacco of Trynidado and the Orinoque, is large, sharpe, and growing two or three yards from the ground, bearing a flower of the breadth of our bell-flowers in England; the salvages here dry the leaves of the *apooke* over the fier, and sometimes in the sun, and crumble it into powder—stalks, leaves and all—taking the same in pipes of earth, which they very ingeniously can make.—*The Historie of Travel into Virginia Britannia*, London, 1849, pp. 121, 122.

Beverley states as to the Indian care of tobacco:

> I am informed that they used to let it all run to seed, only succoring the leaves to keep the sprouts from growing upon and starving them; and when it was ripe they pulled off the leaves, cured them in the sun, and laid them up for use.—*History of Virginia*, edition of 1722, pp. 227, 228.

The common mode of curing it, however, as we find it stated by other annalists, was to hang it up in their habitations, to be dried by the heat and smoke of their fires. Both Sir Richard Grenville, on his return to England, in 1585, and Sir Ralph Lane (who was sent out by Sir Walter Raleigh as the first governor of the colony), in 1586, on his return home, carried with them pipes and tobacco. So between them, and not with Sir Walter Raleigh, as popularly accredited, lies the honor, it appears, of the introduction of tobacco into England. According to Hamor, (*d*) the meed of inaugurating, in 1612, the cultivation of tobacco systematically in the colony is due to John Rolfe, the husband of Pocahontas. (*e*) In 1616, under the stimulus and fostering care of Sir George Yeardley, the deputy governor, the attention of the colonists was engaged in its planting for profit, which speedily became so alluring that they forsook for it all other occupations. When, in 1617, Captain Samuel Argall arrived in the colony as its governor, "he found all the Publick Works and Buildings in James-Town fallen to Decay, and not above five or six Houses fit to be inhabited; the Market Place, Streets, and all other Spare Places planted with Tobacco; and the Colony dispersed all about, as every man could find the properest place and best Conveniency for planting" (Stith, p. 146).

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a *Natural History of Jamaica.*

b *Précis sur l'Amérique*, p. 116.

c Fairholt, *History of Tobacco*, p. 51, quoting from Taylor, the water poet.

d *Raphe Hamor's True Discourse*, 1614. London, 1615, p. 24.

e John Rolfe was clearly a man of sagacity, as well as enterprise, as is evinced in his further interest in and management of tobacco. He wrote in 1616: "Tobacco, though an esteemed weed, is very commodious, which thence thriveth so well that no doubt but after a little more trial and expense in the curing thereof, it will compare with the best West Indies" ("Relation of Virginia," printed in the *Virginia Historical Register*, vol. i, p. 505).

In 1617 one "Mr. Lambert made a great discovery in the trade of planting, for the method of curing tobacco was then in heaps; but this gentleman found out that it cured better upon lines; and therefore the governor wrote to the company to send over lines for that purpose" (Stith's *History of Virginia*, p. 147).

According to the journal of Glover (time of Sir William Berkeley) lines had then fallen into disuse. We quote from this author (whose work we have not at hand) from the paper prepared in 1876 by Mr. John Ott, secretary of the Southern Fertilizing Company, Richmond, Virginia, as follows: "They drive into the stalk of each plant a peg, and as fast as they are pegged they hang them upon tobacco-sticks, so nigh each other that they just touch much after the manner they hang herrings in Yarmouth. When the plant hath put out so many leaves as the ground will nourish to a substance and largeness that will render them merchantable they take off the top of the plant. If the ground be very rich, they let a plant put out a dozen or sixteen leaves before they top it; if mean, then not

The result is exhibited in the shipment to England, in June, 1619, of 20,000 pounds, the crop of the preceding year. This year is noted also as that in which the royal pedant, James I, fulminated his furious *Counterblast to Tobacco*. Although by letters-patent dated the 23d of May, 1609, the Virginia Company of London had been granted "freedom from all Custom and Subsidy for twenty-one years, excepting only five per cent. upon all such Goods and Merchandize as should be imported into England or any other of his Majesty's Dominions", the tobacco of Virginia growth was now subjected to a most onerous and disproportionate taxation, comparing its relative value with that of foreign production, for "upon a general rate made of Tobacco, both *Spanish* and *Virginia*, at ten shillings the pound" there was demanded "sixpence a pound equally upon all; although *Spanish* tobacco was usually sold at eighteen shillings a pound, and sometimes more, and Virginia would seldom bear above three or four shillings." (*a*)

To induce a permanent residence of the colonists, who were chiefly young and unmarried men, the company, in 1620, sent over in two shipments ninety young women of respectability, to supply them with wives, they being chargeable with the cost of transportation, which was first 120, and afterward 150 pounds of tobacco each. In this year also there was exported to England 40,000 pounds of tobacco, of which, however, owing to the little care observed as to quality and the onerous taxation imposed, "the better halfe" did not yield eight-pence per pound, and "the rest not above" two shillings. (*b*) The large production of tobacco at the sacrifice of other crops was not only to the disadvantage of the planter, but occasioned great dissatisfaction with the Virginia Company, as is evidenced in their communications. August 12, 1621, they wrote to the governor and council, "We desire you to give notice to the Collony that after this yeare they expect no further supply of any necessaries to be exchanged with them for their darling tobacco," (*c*) and on September 11, following, the wish is expressed that there would be made "some provision for the burninge of all base and rotten stuff, and not suffer any but very good to be cured, at least sent home whereby these would certainly be more advanced in the price uppon lesse in the quantity". (*d*)

The governor and council were obedient to the wishes of the company, as is exhibited by a communication dated January, 1621–'22:

> It is a thinge very well liked of here that you have left the Price of Tobacco at libertie since it is of such an uncertaine valew by reason of the great difference thereof * * * * For the drawinge of the people from the excefsive plantinge of Tobacco we have by consent of the Generall Assemblie restrayned them to one hundred plantes ye headd, uppon eache of wch plantes there are to be left butt nyne leaves wch pportions as near as could be guessed was generally conceaved would be agreeable with the hundred waight you have allowed. By wch means as also by the course we have taken for the keeping of every man to his trade, we doubt nott but very much prevent the immoderate Plantinge of Tobacco.—Neill's *History of the Virginia Company of London*, p. 282.

This restriction was but badly observed; for in 1628 it was allowed to take 12 leaves "instead of 25 or 30, as heretofore"; and in 1629 to raise 3,000 plants per poll, and 1,000 each for women and children. The next year (1630) this was reduced to 2,000, and in 1631 "no seconds were to be tended".

It was further desired by the colonists that seven shillings per bushel should be established as a merchantable rate for the corn produced, to be paid for by bills of exchange on England "or in commodities to be delivered here at 25 per centum." (*e*) Governor Wyatt was instructed that the colonists were "not to plant above one hundred pounds of tobacco per head", (*f*) and that their attention should be directed instead to the planting of corn. Section 21 of the acts of assembly, March, 1623–'24, also provided "that there be some men in every plantation to censure tobacco". (*g*) Notwithstanding the attempts made to divert the people from the cultivation of tobacco, so profitable had it become through the increased productiveness under improved tillage with the spade and the augmentation

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above nine or ten, and so according to the strength of the soil" (p. 10). In connection with so exhausting a product as tobacco it is interesting to note the opinion of doughty John Smith of the bountiful lands of Virginia as presented to him: "The verdure of the earth in most cases doth manifestly prove the nature of the soyle to be lusty and very rich. * * * For the most part it is a black sandy mold, in some places a fat, slimy clay, in other places, a very barren gravel. But the best ground is known by the vesture it beareth, as by the greatness of the trees, or abundance of weeds, &c. * * * All the varieties of fruits may be there in great plenty by the industry of men" (Smith's *History of Virginia*, etc., Richmond ed., 1819, i, p. 115).

Beverley says of their tobacco-houses and mode of curing: "Their tobacco-houses are all built of wood, as open and airy as is consistent with keeping out the rain; which sort of building is most convenient for the curing of their tobacco" (*History of Virginia*, edition of 1722, p. 251).

The tobacco put up by the colonists for export was in bundles of leaf, as at present; that from the West Indies was in balls, in the preparation of which molasses was used. They made use of manures from their cow-pens and stables, and also of "white and blue fossil marl. * * * Under the government of Sir George Yeardley in 1619, and by the aid of it, they obtained wheat at the rate of 30 bushels per acre" ("Mineral Resources of Virginia"), by G. W. Featherstonehaugh, article in the *Farmer's Register*, vol. i, No. 9, p. 521 (February, 1834).

Much additional of value as to the agriculture of the period may be found in the pamphlet *Early History of Agriculture in Virginia*, 8vo., by N. F. Cabell, esq., of "Washington", Virginia.

a Stith, p. 168.
b Neill's *History of the Virginia Company of London*, p. 243.
c *Ibid.*, p. 238.
d *Ibid.*, p. 244.
e *Ibid.*, p. 282.
f Neill's *History of the Virginia Company of London*, p. 482.
g Hening's *Statutes at Large*, i, p. 115.

of price and consumption in Europe that in 1621 storehouses and factories were established at Middleburgh and Flushing, and 55,000 pounds were exported to Holland, but none to England, because of the excessive impost already mentioned. In 1622 the crop was 60,000 pounds. (*a*) James I had, as stated, in extorting a revenue from the sale of tobacco, violated the charter granted the Virginia Company (which was revoked in 1624 and the company dissolved). His successor, Charles I, with narrow selfishness and an utter disregard of the interests of the colonists, went farther, and proposed that a monopoly should be granted him, to which the colonial assembly entered their protest, and by act passed March 26, 1628, offered to contract with the king for all their tobacco at 3*s.* 6*d.* per pound, delivered in Virginia free of freight or customs, or 4*s.* if delivered in London, its good quality to be insured by an examination by sworn inspectors after being cured. They also requested the king to take annually at least 500,000 pounds weight at the prices stated, and if he should not be disposed to take the overplus, if there should be any, that they be permitted to ship it to the Low Countries, Ireland, Turkey, or elsewhere. They offered to contract for seven years, with the request that, if the consumption of England, with the quantity above stipulated, should exceed the supply from the lower islands, it might be proportionably increased; and in the event of the king's acceding to these terms, they requested that the importation of Spanish tobacco be prohibited. (*b*) It was stated that they had ordered a proclamation to be made requiring the plants to be set 4½ feet apart, (*c*) and twelve leaves only to be gathered, instead of twenty-five or thirty, as had been the custom, great care to be taken also not to burn it in sweating, and they had reduced the quantity to be planted as low as they could, considering the population of the colony and a due regard to the culture of corn. In March, 1629, increased production was allowed in the admission of "2,000 pounds for every head" in a family, "including women and children," but "bad or ill-conditioned tobacco" was required to be burnt under the penalty of being debarred from planting until readmitted by an act of the assembly. (*d*) In February, 1631–'32, in consideration of the low price of tobacco, the poll-tax, which had been 5 pounds, was increased to 10 pounds of tobacco, with the addition of a bushel of corn, (*e*) the price of tobacco in barter being fixed at 6*d.* per pound. (*f*) It was also enacted that "noe person should tend over fourteen leaves, nor gather over nine leaves upon a plant of tobacco, nor tend any slips of old stalks, or any of the second crop" upon forfeiture of the whole crop raised, (*g*) and "all tobacco was to be taken down before the end of November, or else not to be adjudged or accounted merchantable". (*h*) By act passed February, 1632–'33, it was provided that "five storehouses be appointed severally at James City, Shirley Hundred, Denbeigh, Southampton river in Elizabeth City, and Kiskyoke", and the planters were obliged to bring in all of their tobacco to the same before the last day of December, where it was to be repacked, viewed, and tried by sworn men appointed for the purpose, the quantity entered to the several accounts of the planters, and then all payments of debts were to be made at these storehouses, in the presence of the keeper. No tobacco was to be "made upp in rolle", except between the first day of August and the last day of October, (*i*) "and no other tobacco to be made up at all." (*j*) It was directed also that "the planters shall endeavor themselves to plant and sowe those kindes of the long sortes, and all other sortes the next yeare shall be quite left off and given over". (*k*)

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a Hening's *Statutes at Large*, i, p. 126. Bishop (*History of American Manufactures*, i, p. 30) says 66,000 pounds.

b Hening, i, pp. 134–'5, "Mr. Edward Bennet, a citizen of London, was presented with the freedom of the company, because he had written a treatise, setting forth, in a clear and lively manner, the great inconvenience and damage to the nation from this cause" (Stith, p. 199).

c In the time of Glover the distance was reduced to 4 feet, and in that of Smyth, the English traveler, who visited Virginia in 1773, to 3 feet (see *Virginia Historical Register*, vi, 81), which is the distance at the present time. Smyth adds that "the produce of an acre in the culture of tobacco, in the best land, is about 1,660 pounds; on the worst, about 500 pounds. (*Ibid.*, p. 132.) Beverley states that in his day (1722) a dozen hands would produce 16,000 pounds of "sweet-scented" and sometimes more (p. 212).

d Hening, i, p. 152.

e *Ibid.*, p. 159.

f *Ibid.*, p. 162.

g *Ibid.*, p. 164.

h *Ibid.*, p. 165.

i The time was afterward extended to the last day of December.

j Hening, i, pp. 204–205.

k *Ibid.*, p. 205, Clayton (*Force's Tracts*, vol. iii, No. 12, p. 18) says: "There are not only the two distinct sorts of sweet-scented and Aranoka; but of each of these there be several sorts much different, the seeds whereof are known by distinct names, they having been given the names of those gentlemen most famed for such sort of tobacco, as 'Pryor' seed, etc. Nay, the same sort of seed in different earths will produce tobacco much different as to goodness. The richer the ground, the better it is for Aranoka tobacco, whose scent is not much minded, their only aim being to have it spacious, large, and to procure it of a bright color." To insure an early setting of the plants, he steeped the seed in an infusion of stable manure and soot. In sowing the seed he mixed them with ashes. Of the varieties of tobacco, Jones writes: "There are two sorts of tobacco, viz, the Oroonoko, the stronger; and sweet-scented, the milder; the first with a sharper leaf, like a fox's ear, and the other rounder and with finer fibers; but each of them is varied into several sorts. * * * The land in the latitude between James and York rivers seems most nicely adapted for sweet-scented, or the finest tobacco; for it is observed that the goodness decreaseth the further you go northward of the one and the southward of the other. But this may be, I believe, attributed in some measure to the seed and management, as well as to the land and latitude; for on York river, in a small tract of land called *Digges' Neck* [from Edward Digges, who was governor in 1655], which is poorer than a great deal of other land in the same latitude, by a particular seed and management is made the famous crop known by the name of 'E Dees', remarkable for its mild taste and fine smell" (*The Present State of Virginia*, Hugh Jones, 1724, pp. 34–39).

In *Mair's Bookkeeping*, Edinburgh, 1765 (pp. 231–234), the following lesser varieties are enumerated: Long-green, Thick-joint, Brazil,

In August, 1633, the price of tobacco in barter was fixed at 9*d.* per pound (*a*) all accounts and contracts being required to be kept in money, (*b*) and the rate of freight was fixed at £3 per ton. (*c*) January 6, 1639, "tobacco, by reason of the excessive quantities made, being soe low that the planters could not subsist by it," was required to be inspected and the rotten and unmerchantable and half the good to be burnt, so that the whole quantity be reduced to 1,500,000 pounds, without stripping and smoothing, and for the two next years 170 pounds per poll, stripped and smoothed, was to be made, which would make in the whole about 1,300,000 pounds, "and all creditors are to take 40 pounds for the hundred," and "noe man to be obliged to perform above half his covenants about freighting tobacco in 1639". Debts were to be satisfied in tobacco at 3*d.* per pound, and merchants were only allowed to advance 30 per cent. on their goods. (*d*) A ton of tobacco was to consist of four hogsheads, and freight was fixed at £6 per ton. (*e*)

The tobacco made in 1640 was not to be sold under 12*d.*, and that made in 1641 not under 20*d.*, on forfeiture of the whole crop. (*f*) In 1646 the culture of tobacco was introduced into the Dutch colony of New York. In 1649 the quantity of tobacco had so increased that the price had fallen to 3*d.* a pound. (*g*) In 1652 the cultivation of tobacco was forbidden in England, and all plantations there were ordered to be destroyed. In 1655 the crop in Virginia failed through drought. In March, 1657–'58, by enactment, its planting after the 10th of July was forbidden under forfeiture of 2,000 pounds of tobacco, and a duty of 2*s.* per hogshead was levied on all tobacco exported, in lieu of the poll-tax. (*h*) Collectors were to be appointed for the several rivers, and fraudulent practices are manifested by the following provision:

> In case anie person or persons whatsoever shall false pack anie tobacco, that is pack any ground leaves to the quantity of five pounds in a hogshead, among his top tobacco, it shall be lawful to give order for the burning it.—*Hening*, i, p. 492.

In March, 1659–'60, a duty of 10*s.* per hogshead was levied on all tobacco not discharged in the English dominions in Europe. (*i*)

In 1661 the price of tobacco in Maryland was fixed at 2*s.* per pound. (*j*) In March, 1661–'62, tobacco was forbidden to be planted after the last of June (*k*), and in 1662 its price in Virginia fell from 12*s.* to 10*s.* per hundred weight. (*l*) To the detriment of Virginia, it appears that the colonies of New York and Maryland were in this year also engaged in a secret trade in tobacco with the Dutch, and upon complaint Lord Baltimore gave his promise to the English board of admiralty that all such tobacco so discovered in the province of Maryland

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Lazy, and Shoestrings, but it is stated that "all the tobacco in the country, when brought to the warehouses, comes under one of two denominations, viz, Aronoke and sweet-scented. The latter is distinguished by its scent and flavor, is most valued, and grows in greatest plenty in the lower parts of Virginia, viz, James river and York river, and begins now to be planted on Rappahannock and the south side of the Potomac. The planters used to strip a great deal of it, by taking the stem out of the leaf, which then gets the name of stemmed tobacco, as before the stripping it was called leaf. Aronoke, denominated by an Indian name, is generally planted up Chesapeake bay and the back settlements on all the rivers. It is the sort the merchants generally purchase; they do not deal much in the sweet-scented, and any of that sort they buy is commonly leaf. The planters seldom or never strip the Aronoke as they do the sweet-scented". The account in *Harris' Voyages* is to the same effect, both as regards the kinds and the excellence of the sweet-scented tobacco which grows on the York river (Ed. 1764, ii, p. 231). General Washington also recognizes the two great classes, and speaks of his own careful experiments to test the value of different kinds (*Sparks' Writings*, xii, pp. 253, 257, 258, 260). The Oroonoko is no longer confined to the richest soil, nor is it now thought to be less sweet-scented than its rivals. Some years ago the fresh, sandy highlands of Fluvanna—not more fertile than many others—produced it in high perfection, and, being a favorite with the manufacturers, the growers reaped unusual profits. The Pryor tobacco is still also cultivated largely on the south side of James river (*N. F. Cabell*, p. 21).

a Hening, i, p. 210.

b *Ibid.*, p. 216. This was not observed, for accounts of clerk's fees and other charges were kept chiefly in tobacco until 1754, as evidenced in the statutes.

c *Ibid.*, p. 217.

d The advance of the Virginia merchants upon the goods imported by them, as is exhibited by M. S. account books in our possession, varied from 25 to 50 per cent., and in some accounts against John Baylor, 1758–'70, the advance in 1758–'65 is 100 per cent., and in 1766–'70, 75 per cent. *Mair's Bookkeeping*, p. 334, states that in 1761 it was from 35 to 40 per cent. The pound, Virginia currency, rated with the pound sterling as two to three—the first being only worth two-thirds as much as the last, or decimally 3.33⅓ per cent. A valuable article on colonial exchange, entitled "Virginia Colonial Money, and Tobacco's Part Therein", was published by W. L. Royall, esq., now of New York city, in the *Virginia Law Journal* for August, 1877.

e Hening, i, pp. 224-225.

f *Ibid.*, p. 226.

g "A Perfect Description of Virginia", *Force's Tracts*, ii, No. 8, p. 4.

h Hening, i, p. 448.

i *Ibid.*, p. 536.

j Scharf's *History of Maryland*, ii, p. 35.

k Hening, ii, p. 30. From the *Diary of Colonel William Cabell, Sr.*, of Union Hill, (now) Amherst county, Virginia, kept prior to, during, and immediately after the revolutionary war, it appears that plant patches were generally burnt in January and the seed sowed for a succession in February and March, though in 1769 he drew and planted from a patch sowed by the 11th of April. He finished planting his crop June 20, 1774, from seed sown 7th of May. Tobacco seed were sown by him on the 9th of May, 1785, and tobacco hills were made in February and March, generally in new ground. Coltered planting commenced the first season (rain) in May and was generally finished by the last of June, though replanting is mentioned as late as 24th of July. The earliest planting mentioned is the 6th of May, 1787. Cutting commenced about the middle of August and ended about the last of September; but in 1770–'87–'88 and '90 tobacco was cut in July, "on account of its firing." The latest cutting mentioned is the 28th of October, 1786. Prizing commenced the last week in October, and sticking and stripping the first week in September.

l *A Letter to the Clergy of Virginia*, Richard Bland, 1760, p. 12.

should be seized. (*a*) The salary of Sir William Berkeley as governor of Virginia, which was paid out of the revenue from quit-rents and the impost of 2*s*. per hogshead on tobacco, was £1,000 per annum. (*b*) In December, 1662, 30 pounds of tobacco per poll was levied for the building of James City. (*c*) In September, 1664, Maryland having refused to co-operate with Virginia in lessening the quantity of tobacco produced and thus advancing its value, all restrictions upon planting were rescinded. (*d*) In October, 1665, the impost of 10*s*. per hogshead on all tobacco exported elsewhere than to England was restored because of the competition of Maryland, which, under its proprietary charter, enjoyed rights of trade which were denied to Virginia, the latter being restricted in the importation of tobacco to England alone. (*e*) In June, 1666, it was recited that "whereas the quantity of tobacco made in this colony is become so great that all markets have become glutted with it, and the value so reduced as not to offer subsistence to the planter", and in consequence a cessation from planting for one year from February 1, 1666, to February 1, 1667, was proposed, subject to the ratification of the colonies of Maryland and North Carolina, with which commissioners were appointed to treat. (*f*) The conference was successful, for, by act of October, 1666, the preceding act was confirmed and made operative, the two colonies having assented to its provisions. (*g*) This had been a favorite scheme with the assembly, and conferences with the authorities of Maryland and North Carolina had previously been held in 1663–'64–'65.

In August, 1667, "there happened all over Virginia a gust or storm of wind and rain, which continued for three days with such violence * * * that above one-half of their crop of tobacco, which was then standing in the field, was blown away and torn to pieces, the tobacco-houses were blown down, and not one part in three saved of what was made that year." (*h*)

The customs collected in England in 1676 upon Virginia tobacco amounted to £120,000 sterling, while the whole custom duties in the reign of Queen Elizabeth (1590) amounted to only £50,000. (*i*) In April, 1679, the importation of all tobacco from North Carolina, save in payments of debts due, was prohibited, (*j*) and by act of June, 1680, tobacco was forbidden to be shipped before March 20 for two years ensuing, for the better enhancement of price and the lessening of freights. (*k*) In October, 1681, it was provided that after the 10th of September, 1682, all tobacco casks were required to be branded with the first two initial letters of the name of the owner, and the cask was to be allowed for at 30 pounds of tobacco. (*l*) In November, 1682, the price of tobacco was fixed at 10*s*. per hundred-weight. (*m*) During the disputes, in May, 1682, between the governor, Lord Culpepper, and the house of burgesses the inhabitants of the counties of Gloucester, New Kent, and Middlesex proceeded riotously to cut up the tobacco-plants in the beds, especially the sweet-scented, which was produced nowhere else, (*n*) and in October, 1686, the shipment of stalks from which the tobacco had been stripped was prohibited. (*o*) In 1687, the merchants of London petitioned the general assembly to prohibit the exportation of tobacco in bulk, and the statement was made that such as was sold at the mast at 1½*d*. and 2*d*. a pound had been sold to buyers in London at 6*d*. per pound, while sweet-scented in entire parcels sold for 7¾*d*. and 7½*d*. (*p*) According to the report of the receiver-general of the colony, Colonel William Byrd, the revenue of 2*s*. per hogshead and 5*s*. per ton for the year—24th July, 1688, to 24th July, 1689—was as follows:

	£	*s*.	*d*.
For Colonel William Cole's accompt of the lower district of James river	608	0	7¾
For Colonel Matthew Page's accompt of the upper district of James river	527	0	6½
For Secretary Spencer's accompt of the Potomac district	458	4	3
For Colonel John Custis's accompt of the Accompt district	137	11	1
For Colonel Ralph Wormeley's accompt of the Rappahannock district	746	13	8½
For Colonel Edmund Jening's accompt of the York district	1,153	18	4
	3,631	8	6½

a *Calendar of State Papers*, America and West Indies (1661–'68), August 25, No. 537.

b *Ibid.*, No. 368.

c Bland, p. 12.

d Hening, ii, p. 209.

e *Ibid.* The impost on tobacco in Maryland in 1671 was 2*s*. per hogshead.

f *Ibid.*, pp. 224–225.

g *Ibid.*, pp. 229–232.

h Postlethwayt's *Dictionary of Trade and Commerce*, 1757, vol. ii, art. Tobacco.

i Bishop, i, p. 322.

j Hening, ii, p. 425. From *The Revisal of the Laws of North Carolina*, printed by James Davis, Newbern, 1773, it appears that no inspection of tobacco was provided until 1768, when the requirements were made similar to those of Virginia. The weight of the hogshead was made 1,000 lbs. net, and all accounts, according to the statutes, were kept in pounds, shillings, and pence.

k Hening, ii, p. 479.

l *Ibid.*, p. 31.

m *Ibid.*, p. 506.

n Introduction by Charles Campbell to Beverley's *History of Virginia*, edition, Richmond, 1855, pp. 2–3.

o Hening, iii, p. 35.

p "Westover Papers", Wynne's Edition of 1866, *Essay on Bulk Tobacco*, vol. ii, p. 140, *et seq.* Colonel William Byrd wrote January 11, 1688, as to the crops of the preceding (1687): "We had y^e^ most promising this year ever known, but it was generally spoiled by some thicke, close weather in S^br^ [Sept.] so that now tobacco is for y^e^ greatest part either house burnt or hath sweat so much that its become (as you call it) husky, though I dare say y^t^ if mine * * will not pass you must expect none this year from Maryland or Virginia wch has made as bad tobacco this yeare as ever. They have had Assembly lately in Maryland about Bulke. To Perry & Lane, London."—MS. Letter-Book, 1682–'93, in *Collections Virginia Historical Society*.

which is the impost on 36,314 hogsheads at 2*s*. per hogshead. Computing the hogshead at the prevailing weight, 500 pounds, the export was 18,157,000 pounds. (*a*)

In October, 1686, tobacco hogsheads were required to be branded with the weight contained, as well as with the initials of the owner. (*b*) In April, 1695, their size was fixed, the staves to be 48 inches in length, "and noe more," and the diameter of head to be 30 inches. (*c*) The receipts of Receiver-General Byrd between April 25 and October 25, 1704, were:

	£	*s*.	*d*.
Upper district of James river	666	4	0
Lower district of James river	498	14	0
York district	1,297	11	6
Rappahannock district	754	2	4
Potomac district	442	11	9
	3,659	3	7

which is the impost on 36,590 hogsheads, which, at 500 pounds each, would be 18,295,000 pounds. (*d*)

An act passed by the general assembly, October, 1705, provided "that if any tobacco hereafter in any wise whatsoever shall be imported or brought from Carolina, or other parts without the capes, into this Colony and Dominion, in order to be here laid on shore, sold or shipped, the same shall thereby be forfeited and lost", one-half to go to the crown, the remainder to the informer. A further duty of 1*s*. 3*d*. English money per ton burden, according to gauge, was imposed to maintain the cost of the postal service, (*e*) but both this tax and that of 2*s*. per hogshead (now made for hogshead, or 500 pounds of bulk tobacco) were remitted to Virginia owners. (*f*) The abuse of the tobacco trade by smuggling, which the act above was intended to reach, was complained of also in the instructions from the president and masters of William and Mary College, dated August 10, 1723, to John Randolph, then about to depart for England. For the support of the college, their majesties, William and Mary, had in 1692 (O. S.) provided a revenue from a tax of 1*d*. per pound on all tobacco exported from Virginia and Maryland to other plantations. This, it was complained, had been reduced one-half from several causes, among which it was recited that the officers in the lower counties of Pennsylvania and North Carolina, instead of exacting good money, had taken currency of the country, that of North Carolina being little above one-fourth and that of Pennsylvania one half of the value of good money, as to the relative nominal values, which occasioned a greater export from those places. (*g*) It was also stated that there was no longer, as formerly, an officer maintained in Elizabeth river ("from which is the greater part of the exportation of tobacco to the plantations"), nor a searcher at Hampton, "both offices being sunk;" and that "vast frauds" were perpetrated, it being a common practice to carry out tobacco in barrels entered as beef or pork, to conceal it under corn, and to mark the hogshead with less than the real weight. (*h*) The average annual export of tobacco from Virginia and Maryland during the ten years ending in 1709 was 28,858,666 pounds, of which England consumed on an average 11,260,659 and the rest of Europe 17,598,007 pounds. (*i*) The authorities teem with accounts of the distress of the inhabitants of the colonies, of both Virginia and Maryland, at this period from the low price of tobacco, which had been occasioned by overproduction, and planters were unable, from lack of means, to clothe themselves, the practice having been to import their clothing from England and to pay for them with the proceeds of their sales. This is detailed by Governor Alexander Spotswood, together with a beneficial result, who wrote, in 1710, to the lords commissioners of the council of trade, London, as follows:

> The great number of negroes imported here (so long as there remained any money or credit in the Colony to buy them), and solely employed in making tobacco, hath produced, for some years, an increase of the commodity far disproportionate to the consumption that could be made of it in all markets wch the war had left open, and, by a natural consequence, lowered the price to a great degree. This was first felt in those parts of the country whose tobacco is reputed mean, and the people being disappointed of the necessary supplys of clothing for their familys in return of their tobacco, (*j*) found themselves under the necessity of attempting to cloath themselves with their own Manufactures. And the market for tobacco still declining and few stores of goods brought in other parts of the country, through the like necessity have been forced in the same humour of planting cotton and sewing flax and by making the first with their wool, to supply the want of course clothing and Linnen. This is now become so universal that even in one of the best countys for tobacco I'm credibly informed that there has been made this last year above 4,000 yards of divers sorts of Woolen, Cotton and Linnen Cloth. (*k*)

a *Virginia Historical Register*, iii, pp. 187–188.

b Hening, iii, p. 135.

c *Ibid.*

d *Virginia Historical Register*, iii, p. 188.

e Governor Alexander Spotswood, in his letters of the period, makes frequent mention of the opposition of the planters to a tax for the postal service, which was quite as obnoxious to them as was the fateful stamp act afterward; which is interesting, as showing the early drift of political sentiment.—MS. Letter-Books of Governor Spottswood in the *Collections of the Virginia Historical Society*.

f Hening, iii, p. 553.

g This inequality of money values in the several American colonies or states continued during the eighteenth century, and is a constant source of complaint on the part of travelers.

h *Papers Relating to the History of the Church in Virginia*, A. D. 1680-1776. Ed. by Rt. Rev. Wm. Stevens Perry, D. D., p. 550.

i In 1697 the crop in Maryland was unusually small, and it was reported to the general assembly that the tobacco lands were worn out (Scharf's *History of Maryland*, ii, p. 198). In 1708 fines due in tobacco were commutable in the province of Maryland at 10*s*. per hundred-weight.

j "They have their clothing of all sorts from England, as Linen, Woolen, Silk, Hats and Leather."—Beverley's *History of Virginia*, Ed. 1722, p. 255.

k MS. Letter-Book of Alexander Spotswood in the *Collections of the Virginia Historical Society*.

An act was passed by the Virginia assembly at the session for October, 1710, for protection in the standard of tobacco hogsheads, from "cropping, cutting away of the bulge", "drawing the staves," etc., its violation being punishable with a fine of £5 sterling. (*a*) The income of the secretary of the colony at this period from his fees of office was about 110,000 pounds of tobacco. In October, 1712, rolling-houses (warehouses) were appointed for each county in the colony, (*b*) so called from the manner in which tobacco was then transported, the hogshead of tobacco being actually rolled to market on its own periphery through mud, mire, and stream. The cask was made of good oak staves, well hooped, and into this cask the tobacco was pressed, layer by layer, by a lever some 30 or 40 feet long, inserted in a mortise made in a large tree for the fulcrum, against which the hogshead was placed. When fully packed and headed, a wooden spike, some 2 feet long, was driven into the center of each head. The ends, projecting some inches, were rounded, and thus formed an axle-tree, to which shafts, made of a split sapling, were fitted. On these, in front of the cask, a few slabs were nailed, making a platform, which, with sides added, formed a box, in which were stowed provisions for man and horse, a frying-pan, a hoe, an ax, and a blanket. Attached to the rear was a contrivance for carrying fodder. If the distance was moderate, the hogshead was thus rolled on its hoops as tires; but when the distance was considerable (from 50 to 150 miles), rough fellies were spiked to each end about the quarter hoops, and these rude tires served to keep the cask out of the mud and prevent its being worn through. The tobacco-roller, as the driver (usually the owner) was called, never sought shelter on his journey—often of a week's duration—but camped at night by the roadside. This mode continued in vogue until after the beginning of the present century. Arrived at market, and after having had it inspected, the owner himself sold his tobacco, offering the note until he found a purchaser, often, by barter with the merchant, receiving in exchange domestic supplies. (*c*) The price of storage for every cask of tobacco, or its equivalent in bulk (500 pounds), was 12*d.* for the first day or first three months, and 6*d.* for every month afterward. In 1729 tobacco employed nearly three hundred sail of ships in its transportation from Virginia and Maryland, producing jointly over £600,000 worth, and yielding a revenue of £200,000 annually.

It was enacted by the Virginia assembly, November, 1720, that "whoever shall weed, top, hill, succour, house, cure, strip or pack any seconds, suckers or slips of tobacco, shall forfeit the same and pay a fine of 500 pounds of tobacco". (*d*) For the six years 1719–'24 the impost alone of 4*d.* per pound on tobacco yielded to Great Britain the sum of £59,529 7*s.* 2*d.* (*e*)

The abuse of the tobacco trade in North Carolina continued, as was set forth in an act of the assembly passed in 1726:

> Whereas the Act of the General Assembly now in force doth not effectually prevent the bringing of tobacco from North Carolina; and whereas since the making of the said act great numbers of people have, contrary to the repeated orders of this government, seated themselves on the lands between Wiccon's Creek and the line run from the mouth of Nottoway river to describe the boundaries in controversy between this Colony and the said province, and are there encouraged and protected, under pretense of being under the government of North Carolina, contrary to the agreement with that government that the said tract should remain unseated until the bounds should be determined; which persons, so seated as aforesaid, as well as those inhabiting within the province of North Carolina, being under no regulation in the manner of making and packing their tobacco, do, notwithstanding, make and transport in the colony, for traffic and sale, great quantities of tobacco of the growth and manufacture of Virginia to the great deceit of honest traders and the depreciating the staple commodity of this country. For the remedy whereof, a penalty was fixed of ten pounds fine for every hogshead, barrel, or parcel so brought in.—Hening, iv, pp. 175–177.

This grievance doubtless hastened the running of the dividing line between Virginia and North Carolina in 1728, of which Colonel William Byrd has left so interesting an account.

In May, 1730, it was enacted: "for the more effectual preventing the exportation of all trash, bad, unsound and unmerchantable tobacco," it was required after the 1st of August of that year "that all which shall be exported out of this Colony and Dominion to be brought to a public warehouse and inspected", an infringement of this requirement being made a felony. The inspectors at each warehouse were to be "three fit and able persons", two of whom were to act as inspectors, and the third was to be called in case of difference of judgment, (*f*) the tobacco, after being duly inspected and weighed, to be receipted for with notes, under the hands and seals of the inspectors of the warehouse, for the tobacco, specified as sweet-scented or Orinoco, stemmed or leaf, the same to be current and payable for all tobacco payments within the county where issued, or any county adjacent thereto. Thirty pounds was made the allowance for cask and 5*s.* as the price of the hogshead, well-lined and fit for shipping, and each hogshead was to contain not less than 800 pounds. (*g*) The allowance to the inspector for

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a Hening, ii, p. 498.

b *Ibid.*, iv, pp. 32–36.

c Article, "Tobacco", by Samuel Mordecai, in the *Transactions of the Virginia State Agricultural Society*, vol. i, 1853, p. 57.

d Hening, iv, p. 87.

e Beawes, *Lex Mercatoria Rediviva*. London, 1773, p. 561.

f Hening, iv, pp. 247–271.

g The hogsheads, as first described, contained about 350 pounds, and were enlarged successively to the capacity of 500, 800, 850, 900 950, 1,000 (act of October, 1778), and 1,100 pounds, though they were often latterly much greater. In *Mair's Bookkeeping*, Edinburgh, 1765, it is stated (p. 334) that they were frequently 1,400 and even 1,800 pounds in weight. In the MS. Account Book of Thomas Stegge, auditor-general of the colony, of several hundred hogsheads received by him as dues and shipped in the years 1663–'66, the weights as enumerated by him range from 420 to 755 pounds.

"shrinking and wasting" was two pounds in every hundred if not paid away in two months, and one pound for every month afterward, the whole, however, not to exceed six per cent., and various allowances in different counties were provided in the weights of tobacco, to compensate for the expenses of transportation, according to their distance from market or points of shipment. Sheriffs and collectors were allowed 4 pounds in the hundred for all tobacco paid to government by inspector's notes. All tobacco shipped to Maryland was required to be inspected and stamped. All stemmed tobacco not laid straight, whether loose or in bundles, and all tobacco packed in hogsheads which exceed 48 inches in length of stave or 30 inches across the head within the cross, making reasonable allowance for prizing—not to exceed 2 inches above the gauge in the prizing head—was to be accounted unlawful tobacco, and not be passed or received, and was also to be repacked in sizable casks.

Refuse tobacco was to be burned in the presence of the inspectors, and overseers of plantations were made liable for such waste. All marks, numbers, weights (gross, net, and tare) were required to be entered in a book kept by the inspectors, as also the ship or ships upon which the tobacco was loaded, and they were required to make an annual report to the naval officer before the 1st of July; to make out and give bond with good security of £1,000 lawful money; to be fined if found guilty of receiving bribes; to be disabled from holding any other colonial office and not to be allowed to trade in tobacco, their salary being fixed at £60. (*a*) Forging tobacco notes was made a felony, and the penalty for taking unstamped tobacco on board a vessel was £25 and forfeiture of the tobacco.

In 1731 the price of tobacco in the province of Maryland was fixed at 6*s.* per hundred pounds. (*b*) In this year also the exports of tobacco from Virginia and Maryland was 60,000 hogsheads of 600 pounds each, which yielded £375,000, the net value of which to England was £180,000, which sum was paid in merchandise. The imposts upon tobacco by Great Britain became so onerous, and the abuse of the trade by the English factors in the extent and multiplicity of their charges so oppressive, that the colonists in 1732 published their grievances to the world in pamphlet form. (*c*) Nor were fraudulent practices confined to England, for an instance is cited of a dishonest shipper in Virginia, who, in loading a vessel with 310 hogsheads of tobacco in the year 1727, by a misrepresentation of weights (the original marks being erased) defrauded the crown of nearly one-seventh part of the duties. (*d*) The contrast of the prices obtained in Virginia and in England is exhibited in the statement that "in this present year tobacco has been sold to foreign buyers from twopence half-penny to threepence half-penny; * * * * yet at this juncture the best Oronoko tobacco is sold to buyers in London, for the home consumption, for sevenpence a pound", and the charges to which it was subject are evidenced by the fact that the price yielded to the planter was "not more than one penny half-penny, without the duty". (*e*)

Examples of the government duties and the merchants' charges are afforded by the following bills rendered of sales:

TEN HOGSHEADS OF TOBACCO.

Dr.	£.	s.	d.	Cr.	£.	s.	d.
Duties, freight, and other charges	165	15	7	Sold 5,237 pounds, at 1*d*	21	16	3
Commission, at 2½ per cent	3	16	4	Debentures and other allowances	131	19	2
					153	15	5
				The owner in debt	15	16	6
	169	11	11		169	11	11

FORTY-FOUR HOGSHEADS.

Dr.	£.	s.	d.	Cr.	£.	s.	d.
Duties, freight, and other charges	652	9	4	Allowance for damage	4	16	10
Commission, at 2½ per cent., on £694 4*s.* 7*d*	17	7	2	7 hogsheads, at 3*d*	46	10	10
Net proceeds	29	4	11	11 hogsheads, at 1*d*	23	9	9
				1 hogshead, at 1½*d*	3	4	10
				5 hogsheads abroad	22	16	10
				1 hogshead, at 8½*d*	14	19	3
				16 hogsheads, at 1½*d*	45	6	7
				3 hogsheads, at 1¾*d*	10	14	2
				Drawbacks, &c	527	2	4
	699	1	5		699	1	5

a Hening, iv, pp. 247–271.

b *The Case of the Planters of Tobacco in Virginia*, as represented by themselves; signed by the President of the Council and Speaker of the House of Burgesses, to which is added a vindication of the said representation. 8vo. London, 1733.

c *Case of the Planters*, etc., p. 23.

d *Ibid.*, p. 25.

e *Ibid.*, pp. 34, 35.

ONE HOGSHEAD OF TOBACCO. (*a*)

Dr.	£.	s.	d.
Old subsidy of 739 pounds tobacco, at 1*d.* per pound, 25 per cent. deducted	2	6	2
Custom, at 5*d.*, one-third per pound, 15 per cent. off	13	19	2
	16	5	4
Entry, land waiters and bill money	0	1	0
Freight	2	0	0
Primage and petty charges	0	2	2
Cooperage and porterage	0	2	6
Cartage home	0	0	9
Warehouse rent	0	2	6
Brokerage	0	2	0
Impost and cocket	0	3	0
Cutting	0	2	0
Commissions, at 2½ per cent	0	9	6
	19	10	9

Sold:	Pounds.	Cr. £.	s.	d.
Suttle	812			
Tare	86			
Damage	30			
Draught and sample	8			
Tret	26			
	— 150			
662 net, at 6½*d.*		18	12	4
By the ship for 40 pounds damage		0	5	0
Certificate for allowance on do. at one-half penny per pound		0	1	8
		18	19	0
The planter in debt upon balance		0	11	9
		19	10	9

An additional example is given, in which the net proceeds of six hogsheads of tobacco were only £15 2*s.* 8*d.*, (*b*) and it is stated that from "an Account of the year 1694 * * * * all the small Charges upon a Hogshead of Tobacco amounted to no more than 3*s.* 6*d.*", and that "in all the Accounts of a Gentleman about Ten years ago [1719] no more than 7*s.* 8*d.*" was "charged besides Bill Money". (*c*) The rate of interest charged the planters was seven per cent. (*d*) The practices cited continued until the Revolution, for in an account of sales in our possession, rendered in December, 1776, by John Norton & Son, of London, of twenty hogsheads of tobacco, for Savage & Norton, of Virginia, the charges and duties were £579 17*s.* 7*d.* and the commissions, etc., £87 12*s.* 5*d.*, making a total of £667 10*s.*, while the net proceeds were less than one-third of the amount, being only £207 6*s.* 4*d.* Of these practices Keith says:

As to the British merchants and the planters' interests, with respect to their conduct and management in carrying on the tobacco trade, they have each of them taken great pains to pursue that business in such a mysterious way as it is not easy for those who are not immediately concerned therein to trace; and in truth it must be owned that the multiplicity of duties, drawbacks, bonds, and other regulations of the customs wherewith the trade is perplexed, has, in a great manner, forced the merchants into many contrivances, which in all probability would otherwise never have been thought of.—*History of Virginia*, by Sir William Keith, London, 1738, p. 184.

The first manufactory of tobacco in Virginia of which we have found mention was that of a Major Woodford, on the Rappahannock river, described by Colonel Byrd, in his *Progress to the Mines* in 1732, as follows:

Major Woodford manufactures 60 hogsheads yearly, for which he gets 11*d.* a pound. * * * * The tobacco he cuts is long Green, which, according to its name, bears a very long leaf, and consequently each plant is heavier than common sweet-scented or Townsend tobacco. The worst of it is thatthe veins of the leaf are very large, so that it loses a great deal of its weight by stemming. This kind of tobacco is much the fashion in these parts, and Jonathan Forward (who has great interest here) gives a good price for it. This sort the Major cuts up. * * * * The Tobacco is stemmed clean in the first place, and then laid straight in a box, and pressed down hard by a press that goes with a Nut. This Box is shov'd forward towards the Knife by a screw receiving its motion from a Treadle, that the Engineer sets a going with his foot. Each motion pushes the Box the exact length which the Tobacco ought to be of, according to the saffron or oblong cut, which it seems to yield one penny in pound more at London than the square cut, tho' at Bristol they are both of equal price * * * * After the Tobacco is cut, it is sifted through a Sand Riddle and then thro' a Dust Riddle, till 'tis perfectly clean. Then 'tis put into a tight Hogshead and prest under the Nut, till it weighs about a Thousand Neat. One considerable benefit from planting long Green Tobacco is, that 'tis much hardyer and less subject to fire than other sweet-scented, tho' it smells not altogether so fragrant.—*Westover Papers*, Wynne's Edition, Richmond, 1866, ii, pp. 76–77.

Another manufactory, on a smaller scale, of no little note in its day, was set up by Colonel Cabaniss, of Mecklenburg county, about, or before, 1769. Mr. Custis, of Arlington, who has recorded this fact, professes to have divulged the before secret mode of management which gave its extraordinary popularity to "the weed" as it came from this first tobacco factory on the south side of the James river, where they are so numerous. (*e*) In 1731 there were owned in the province of Maryland sixty vessels of 2,000 tons burden, manned by 480 sailors, and by Great Britain one hundred and eighty more, of 10,000 tons burden, employing 3,000 men, which were employed in the tobacco trade. (*f*)

In 1732 tobacco was made a legal tender in Maryland at 1*d.* a pound, and in March of the same year it is recited in an act:

As by inspection tobacco is deemed one-fourth better than tobacco before the inspection took place, 12*s.* 6*d.* is now the rule and standard for the 100 pounds of tobacco.

In the following year, in the same province, all "trash tobacco" was ordered to be burned, and the tax upon every hogshead of tobacco was 1*s.* 3*d.* (*g*)

a *Case of the Planters*, etc., pp. 40, 41. *b* *Ibid.*, pp. 42, 43. *c* *Ibid.*, p. 50.

d *Ibid.*, p. 56; afterward reduced to five per cent. by some merchants at least.

e N. F. Cabell, in his *Early History of Agriculture in Virginia*, p. 21, quoting from *The Southern Planter*, iv, p. 165.

f Scharf's *History of Maryland*, ii, p. 14.

g Bisset's *Abridgment of the Laws of Maryland*, 1759, p. 159. Systematic inspection of tobacco was not provided in Maryland until 1748.

In August, 1734, by an act of the Virginia assembly, the salaries of inspectors were graded from £30 to £60.; (*a*) in 1736 they were prohibited from serving as burgesses, to be present at elections, or to meddle therewith, (*b*) and by the act of November, 1738, they were required to attend at the warehouses between November 10 and the last day of August. (*c*) In 1739 the church wardens of Henrico parish, Henrico county, were empowered to sell the parish tobacco at 12*s*. 6*d*. per hundred-weight. (*d*) In 1740 Maryland exported 30,000 hogsheads of tobacco of 900 pounds each. By act of the Virginia assembly, November 9, 1742, fraudulent delivery of tobacco was made a felony, (*e*) and in May of that year the several county courts were required to nominate inspectors. (*f*) In 1745, the weight of a transfer hogshead of tobacco was fixed at 950 pounds. (*g*) In 1744–'45–'46 the average annual export from the American colonies was 40,000,000 pounds, of which 7,000,000 pounds were consumed in Great Britain and 33,000,000 in other European countries, and in 1745 tobacco appears to have been current in Virginia at 14*s*. per hundred-weight. (*h*) The annual exports of tobacco from Virginia for twelve years, 1745 to 1756, were as follows: (*i*)

Exports.	1745.	1746.	1747.	1748.	1749.	1750.	1751.	1752.	1753.	1754.	1755.	1756.
	Hhds.	*Hhds.*	*Hhds.*	*Hhds.*	*Hhds.*	*Hhds.*	*Hhds.*	*Hhds.*	*Hhds.*	*Hhds.*	*Hhds.*	*Hhds.*
Upper district of James river	10,991	10,799	9,355	12,480	11,509	12,974	10,858	13,530	18,830	13,900	13,739	7,202
Lower district of James river	1,381	1,372	1,718	3,170	3,150	2,218	2,525	1,423	2,113	1,181	918	1,096
York River district	11,118	11,015	12,895	11,089	10,970	13,802	12,054	12,623	15,127	14,878	15,344	6,918
Rappahannock district	12,332	10,745	12,132	13,052	15,012	14,331	13,553	14,299	16,815	13,512	11,963	8,531
South Potomac district	6,659	6,311	5,704	6,983	7,346	5,242	7,713	6,505	6,959	7,332	5,723	4,645
Accomac, 3 barrels in 1753 and 11 in 1755	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	42,481	40,242	41,804	46,783	47,987	48,567	46,703	48,380	59,844	50,803	47,687	28,452

In February, 1752, by an act of the Virginia assembly, no crop notes of an older date than eighteen months were allowed as a legal tender. (*j*) In 1747 and the two years previous there were annually exported from the American colonies 40,000,000 pounds of tobacco, of which 7,000,000 were consumed in England, yielding a revenue of £700,000.

In 1755, under the "option act", the clergy in Princess Anne and Norfolk counties, Virginia, were deprived of their tobacco (the fixed annual salary being 16,000 pounds) and were forced to accept a compensation in money. In those counties which yielded tobacco, the worst and meanest in the country did not sell for more than 8*s*. or 10*s*. per hundred-weight, and often under, the land not being suited to its culture. (*k*) The price in London this year was from 11*d*. to 12½*d*. per pound. In a communication from the clergy of Virginia to the Bishop of London, dated February 25, 1756, it is stated in complaint that the colonists "value our tobacco at 2*d*., when 3*d*. is expected, if not 4*d*., when the market is low, as has generally been the case since 1724". (*l*) The price in 1755 is stated not to have been under 10*s*. per hundred-weight. In a communication dated November 20, 1756, it is stated that the common crops are about 50,000 hogsheads, and the price from 12*s*. to 18*s*. per hundred-weight. (*m*) In 1758 the crop was short, only 24,500 hogsheads being made, and it is given in evidence that tobacco was purchased during this year by Humphrey Hill, merchant in King William county, at 50*s*. per hundred-weight. (*n*) "In 1757 many thousands of the people of Virginia did not make a pound of tobacco, and all made would not have been 200 pounds per tithable." (*o*) By an act of the Virginia assembly, passed November, 1759, fees due in tobacco were made payable in money at 16*s*. 8*d*. per hundred-weight. Burnaby, an English traveler who visited Virginia in 1759, stated that the annual export of tobacco from the colony was from 50,000 to 60,000 hogsheads of from 800 to 1,000 pounds weight each; (*p*) but in 1761 the governor and council of Maryland reported to the board of trade, London, that the annual export from that province was 28,000 hogsheads, valued at £140,000. (*q*) The price of tobacco in Virginia during the years 1761–'63 ranged from 18*s*. to 25*s*. per hundred-weight, the average price being 22*s*. 6*d*. (*r*) According to Mair, who writes in 1765, the yearly export of tobacco from Virginia and Maryland was 80,000 hogsheads, rather more than half of the quantity being from Virginia, the value to the planter being £5 sterling per hogshead, which made their yearly income £400,000, and, allowing the sale price at £9, the amount was £720,000. (*s*)

In 1765 a duty of 3*s*. per hogshead on all exports of tobacco (*t*) was levied by the Virginia assembly, and the weight of the hogshead was fixed at 950 pounds, that for transfer at 1,000 pounds. (*u*) The annual exportation

a Hening, iv, pp. 382–386.
b *Ibid.*, v, p. 482.
c *Ibid.*, v, p. 98.
d Vestry Book of Henrico parish, 1730–1773.
e *Ibid.*, v, pp. 10–16.
f *Ibid.*, v, pp. 124–160.
g *Ibid.*, v, pp. 367–369; edition by R. A. Brock, p. 52.
h MS. Minutes of the Society of Friends, Henrico county, Virginia, 1698–1756.
i *The Fairfaxes of England and America*, E. D. Neill, p. 225.
j Hening, vi, p. 225.
k Bland, p. 12.
l *Papers Relating to the History of the Church in Virginia*, A. D. 1650–1776; edition by W. Stevens Perry, D. D., p. 441.
m *Ibid.*, p. 465.
n *Ibid.*, p. 482.
o Bland, p. 16.
p Burnaby's Travels in Virginia, *Historical Register*, v, p. 87.
q Scharf, i, p. 520.
r MS. Account Book of Pettus Rayland, "Slasher," Hanover county (the weights of hogsheads given being from 1,000 to 1,350 pounds), and according to the Diary of Colonel William Cabell, of "Union Hill", the price of tobacco from 1760 to 1776 was from 20*s*. to 22*s*. per hundred-weight.
s Mair's *Bookkeeping*, Edinburgh, 1765, p. 336.
t Hening, viii, p. 73.
u *Ibid.*, p. 109.

from the American colonies from 1763 to 1770, both inclusive, was 66,780 hogsheads of about 1,000 pounds each, or 67,780,000 pounds. In 1770 Virginia and Maryland sold 110,000 hogsheads of tobacco to England, the share of Maryland in that to the port of Bristol alone being £300,000. (*a*) Tobacco was the great currency of Maryland until just before the Revolution.

As we have now approached the period when the exportation of tobacco arrived at a point from which it has vibrated (sometimes a little above or below it), we subjoin a statement of the exportation for the years 1772-'73-'74-'75 inclusive, which will furnish the remarkable fact that, compared with any succeeding four years since that period, the annual exportation of tobacco just before the Revolution was about the same that it has been at any time since, prior to 1840, in our most prosperous periods. For although 1790-'91-'92 were three years of very heavy exportation, they fell off in 1793 nearly one-half, making the annual average exportation not materially different from 1772-'73-'74-'75.—*Lex Mercatoria Rediviva*, p. 56. (*b*)

The following statement shows the quantity of tobacco exported from the United Colonies from 1772 to 1775, inclusive: (*c*)

Year.	Pounds exported.	Pounds consumed or remaining on hand in Great Britain.	Pounds consumed or remaining on hand in other countries of Europe.
1772	97, 799, 203	97, 791, 805	7, 458
1773	100, 472, 007	3, 695, 564	96, 776, 443
1774	97, 375, 252	18, 698, 337	78, 676, 915
1775	101, 828, 617	27, 623, 451	74, 205, 166
Total	397, 475, 139	147, 809, 157	249, 665, 982

The inspection laws of Virginia expired by limitation October 1, 1775, and by act of December in that year it was provided that the quality of tobacco might be decided by the neighbors of the owner. (*d*) By act of October 7, 1776, the inspection laws were temporarily revived, the impost duties were abolished, and the exportation of tobacco to England was forbidden. (*e*)

We have now arrived at the period of the Revolution, and the following table will exhibit the exportation during that period:

Year.	Pounds exported.	Pounds consumed or on hand in Great Britain.	Pounds consumed or on hand in other countries in Europe.
1776	14, 498, 500	(*a*)	14, 498, 500
1777	2, 441, 214	(*b*)	2, 441, 214
1778	11, 061, 333	7, 520, 550	4, 440, 783
1779	17, 155, 907	10, 982, 899	6, 173, 008
1780	17, 424, 967	11, 474, 791	5, 950, 176
1781	13, 339, 168	7, 600, 296	5, 738, 872
1782	9, 828, 244	6, 364, 813	3, 463, 431
Totals	86, 649, 333	43, 942, 349	42, 765, 984

a This year Great Britain exported to the continent nearly 20,000,000 pounds of old stock.
b Great Britain exported this year to the continent 6,000,000 pounds of former stock.

The total exportation for the seven years was 86,649,333 pounds, or an annual average of 12,378,504 pounds. Of the total seven years' exportation, 33,974,944 pounds were captured by the British during the war. (*f*) J. H. Norton, of the firm of John Norton & Son, London, England, writing from thence under date of February 2, 1776, to Nathaniel Littleton, Virginia, says, speaking of the 5th of September preceding: "Tobacco was then selling at about 11 to 12 and 12½*s*. and likely to rise." And further on he says: "I have such expectations of a change in favor of the colonies, that I should like to speculate with you in a purchase of tobacco on the Eastern Shore if it could be purchased for about 10 or even 12*s*. 6*d*. current, per cwt." (*g*)

In October, 1777, by an act of the Virginia assembly, a duty of 10*s*. per hogshead was required to be paid on all tobacco exported, (*h*) and in May, 1779, it was increased to 30*s*. per hogshead, the inspection fees being fixed at

a Scharf's *History of Maryland*, ii, p. 47. According to Beawes, 100,000 hogsheads were exported yearly, employing between 300 and 400 ships, navigated by upward of 4,000 sailors; of these 60,000 hogsheads are re-exported to foreign ports, yielding £5 per hogshead, beside duties and drawbacks.

b According to the British *Annual Register* of 1775: "The imports into Great Britain before the war from Virginia and Maryland were 96,000 hogsheads of tobacco, of which 13,500 were consumed at home, and the duty on them, at £26 1*s*. each, amounted to £361,375. The remaining 82,500 were exported by our merchants to different parts of Europe. This single trade constantly employed 330 ships and 3,060 men." Jefferson says: "Before the war we exported *Communibus annis* Tobacco, 55,000 hhds. of 1,000 lbs., at 30 dollars per hhd., amounting to $1,650,000."—*Notes on Virginia*, edition of J. W. Randolph, Richmond, 1853, pp. 177-178.

c De Bow's *Southern States*, "Sugar, Tobacco, etc.," iii, p. 348.

d Hening, ix, p. 97. "While tobacco was largely grown on our principals below tide, and the market was wholly abroad, it was thought a hardship on such planters as could load a vessel from their own shores to compel them first to carry their crops to a distant warehouse to be inspected; and these clamors, after a few years, induced a repeal of the law. But its benefits had outweighed the inconvenience, and in time it was re-enacted; and as the culture of the plant spread westward the planters acquiesced in the arrangement, which improved the quality of their staple and presented numerous brands.—N. F. Cabell, p. 92.

e *Ibid.*, pp. 153-163. *f* De Bow, iii, p. 348. *g* *Calendar Papers of State of Virginia*, i, pp. 270, 271. *h* Hening, ix, p. 368.

8*s.* (*a*) In November, 1781, the charge allowed for storage was 2*s.*, and for reprizing, 5*s.* per hogshead, (*b*) and tobacco fees were made payable in money at 12*s.* 6*d.* per hundred-weight. (*c*) In May, 1782, the export duty was 6*s.*, (*d*) and in May, 1783, 4*s.* per hogshead, (*e*) and "Death without clergy" was made the penalty for forging tobacco notes. (*f*) In May, 1784, an additional 3*s.* per hogshead was imposed on all the tobacco exported. (*g*)

The following table exhibits the exports of tobacco from the United States for the years 1787–'88–'89, immediately preceding the adoption of the present constitution:

The following exhibits the depreciation of continental money rather than the true prices of tobacco. In 1777 it sold for 34*s.*; in 1778, for 70*s.*; in 1779, for 400*s.*; in 1780, for 1,000*s.*; in 1781, for 2,000*s.* per cwt. But the prices given in 1782–'83–'84–'85 as from 36 to 40*s.*, and in 1786–'87–'88 as from 21 to 30*s.*, were doubtless the actual values.—*MS. Diary of Colonel William Cabell.*

In the argument of counsel in *Doe, lessee of Baylor, v. Dejarnette* (reported in 13 Gothaux, p. 152), in some accounts adduced (p. 92), the net proceeds of sales of 60 hogsheads of tobacco made December, 1774, are given as £687 15*s.* sterling, and of sales of 73 hogsheads, March, 1776, net £1,710 14*s.* 10*d.* sterling. In 1780 the price of tobacco advanced at the Richmond warehouses from £30 per hogshead in January to £75 per hogshead in December.

Year.	Pounds exported.	Pounds consumed or remaining on hand in Great Britain.	Pounds consumed or remaining on hand in other countries in Europe.
1787	90,041,000	45,370,795	44,661,205
1788	88,595,590	39,600,404	48,995,186
1789	88,675,000	48,831,232	39,843,768
Total	267,311,590	133,811,491	133,500,159

In the progress of our task of compilation, the conviction has been enforced that it is invested with more importance than we had apprehended. It is manifest, from the detailed abuses and frauds which were practiced in the tobacco trade of the colony, that the accepted estimates of the extent of the product of Virginia, heretofore published, must have been largely assumptive, because of the necessary incompleteness of the records kept of the exports. This conclusion finds, too, strong additional basis in the varying figures presented by different writers for the same periods. It is evident from the records and from the concurrent testimony here adduced that the tobacco crop of Virginia for several decades prior to the Revolution, if not earlier, has been underestimated, the more especially when a comparative quantity has been assigned to her in the English records of the combined exports of Virginia and Maryland. Not only is it now established by authoritative figures and testimony that the proportion of Virginia in such published reports was greater than has been assumed, but it may be presumed also, from the greater latitude of exportation enjoyed under her proprietary rights by Maryland, that her apparent export was largely augmented by surreptitious and illegal shipments of the product of her sister colony, to the diminishing exhibit of the last.

It is feared that a complete record of the tobacco product of Virginia prior to the Revolution may not now be attainable, but the justice of our remarks is sufficiently established by the following array of facts which have been presented in the preceding pages:

A RECAPITULATION OF THE QUANTITY OF TOBACCO EXPORTED FROM VIRGINIA, AND OF THE PRICES, FROM 1619 TO 1775 (WITH INTERVALS), INCLUSIVE.

Year.	Crop.	Prices.		Year.	Crop.	Prices.		Year.	Crop.	Prices.	
	Pounds.	*Per pound.*	*Per cwt.*		*Pounds.*	*Per pound.*	*Per cwt.*		*Pounds.*	*Per pound.*	*Per cwt.*
1619	20,000	3*s.*		1666	(*b*)			1749	43,188,300		(*f*)
1620	40,000	8*d.* to 2*s.*		1667	(*c*)			1750	43,710,300		(*f*)
1621	55,000			1682			10*s.*	1751	42,032,700		(*f*)
1622	60,000			1687	(*d*)			1752	43,542,000		(*f*)
1628	500,000	3*s.* to 4*s.*		1688	18,157,000			1753	53,802,300		(*f*)
1632		6*d.*		1704	18,295,000	2*d.*		1754	45,722,700		(*f*)
1633		9*d.*		1720		2*d.*		1755	42,918,300	(*g*)	10*s.*
1639	1,500,000	3*d.*		1731	(*e*)			1756	25,000,800		
1640	1,300,000	12*d.*		1739			12*s.* 6*d.*	1757	(*h*)		
1641	1,300,000	20*d.*		1745	38,232,900		14*s.*	1758	22,050,000		50*s.*
1661			12*s.*	1746	36,217,800		(*f*)	1759			10*s.* 8*d.*
1662			10*s.*	1747	37,623,600		(*f*)	1760–1775	(*i*)		18*s.* to 25*s.*
1664		(*a*)		1748	42,104,700		(*f*)				

a 3*d.* to 3½*d.* per pound, the price in London.
b No crop made; planting prohibited.
c Two-thirds of the crop destroyed by a storm.
d Poor crop of bad quality. Price in London for bulk, 1½ to 2*d.*, and for sweet-scented, 7½ to 7¾*d.* per pound, in packages.
e Exports of Virginia and Maryland *reported* as 36,000,000 pounds.
f Price current, at which estimated according to contemporaneous records, 1746–'64, was 2*d.* per pound.
g Price in London, 11*d.* to 12½*d.*
h A short crop made.
i The crop for the period 1760–'75, according to authoritative and concurrent testimony, was from 50,000 to 60,000 hogsheads, of 1,000 pounds each, annually, or an average at least of 55,000 pounds; of which the average price was 22*s.* 6*d.* per hundred-weight. The average price in London in 1775 was 12*d.* per pound. In 1769 the price in Antigua was from 5*d.* to 6*d.* per pound. In 1781 the price of tobacco in Virginia was fixed at 12*s.* 6*d.* per hundred-weight.

a Hening, x, p. 78. *b Ibid.*, p. 476. *c Ibid.*, p. 489. *d Ibid.*, xi, p. 95. *e Ibid.*, p. 201. *f Ibid.*, p. 241. *g Ibid.*, p. 394.

We have now brought our narrative to the period of the first national census, and our task has been, as it were, over a tangled and ungarnered field. With the limits as to length, scarce more than a bare recital of facts was admissible. We have been careful to omit nothing within the range of our acquirement which seemed essential, the authority for the statements being given in every instance. The matter presented has been laboriously gleaned from diverse, obscure, and unpublished sources, in some instances from manuscripts of which but single copies are in existence. The thorough and extended investigation already made secures a basis of reference that will be helpful to those who, in future years, may be able to extend the work to greater and more minute completeness. Tobacco has ever been the staple product of Virginia (the first settled of the English colonies in America) and its chief source of wealth. It is now one of the most prolific factors in the revenue of the general government. As has been demonstrated, it once permeated the entire fabric of society in Virginia. It directed the colonial laws, which consisted chiefly of regulations for its culture, quality, and sale. An attempt to make it yield a revenue for the sustenance of the postal service led to an expression of defiance anterior to the resistance to the stamp act by more than half a century. For two hundred and fifty years it was the principal currency of the colony and the basis of all values, and from its paramount profit its culture engrossed the attention of the colonists, and thus subordinated the entire remaining agricultural and manufacturing interests of Virginia.

Upon a careful examination of the whole subject, there is observed a kind of periodical fluctuation in the annual shipment of tobacco to foreign countries, as it appears that, when our exports of leaf tobacco for two or three successive years much exceed 100,000,000 pounds, for some succeeding years they are proportionately reduced below that standard. It is evident that the revolutionary war gave a check to the exportation of leaf tobacco from which it has never recovered; until that period the annual average exportations increased regularly and steadily. In other words, for the thirty-one years immediately preceding the Revolution our export of leaf tobacco annually increased, and for the sixty years since that period it has remained stationary, except when interrupted by wars or other commercial embarrassments. The reason is apparent. Before the Revolution all Europe depended on us for supplies of the article; but being cut off by the war, Europeans turned their attention to growing tobacco for themselves, and have continued to cultivate it all over the continent, while they have checked its consumption by the onerous taxation above indicated. (*a*)

According to the diary of Colonel William Cabell, senior, of Union Hill, tobacco in 1794 was worth in Richmond, Virginia, from 20*s*. to 24*s*. per hundred-weight. It appears also, from the same authority, that "Swan creek" tobacco of his section commonly commanded 1*s*. per hundred-weight more than that grown in other sections of Virginia.

According to the diary of Thomas Rutherford, an old and highly-respected merchant of Richmond, shipments of tobacco before the commencement of the war, and until 1814, in which he was interested, sold at that time in Dublin for 15*d*. per pound.

It will be remembered, in comparison of the tobacco production of recent years and the tobacco production of early years, that the Virginia of the early days included West Virginia, now erected into a separate state.

CHAPTER XVII.

CULTURE AND CURING OF TOBACCO IN WEST VIRGINIA.

Tobacco has been raised in West Virginia to a limited extent for more than a half century, and in 1869 the whole product of the state was only 2,046,452 pounds, many things having heretofore contributed to prevent large plantings of tobacco, the most important of which was the lack of facilities for transportation. This industry is growing rapidly of later years, as cheaper and quicker means of reaching market are afforded and the capabilities of the lands are becoming better known.

Formerly the bulk of the crop was produced in a few counties in the Great Kanawha valley and on the Ohio river, and was sold principally in Louisville and Baltimore; but Cincinnati is now the market for the greater part of this crop, which is mainly dark shipping tobacco.

Before 1853, and for some time afterward, the product of what is now West Virginia was all classed as "Western", and it has not yet received any distinctive name, the bright tobaccos being classed with the Virginia, and the dark with the Ohio crop.

QUALITY OF TOBACCO.

The tobacco produced in West Virginia may be divided into Dark Shipping, Red and Spangled, Bright Yellow, and White Burley, some counties producing two or more of these; but in the following description of the districts each county is classed according to the predominant quality of its crop, Tyler county, for instance, producing some of all four grades, and being classed in the Red and Spangled district.

DARK SHIPPING is produced in Kanawha, Putnam, and Mason counties, in the Great Kanawha valley; also in Jackson, Cabell, Wayne, and Wood counties, lying along the Ohio river.

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a De Bow, iii, pp. 349–350.

RED AND SPANGLED.—There are many grades of this tobacco produced in Boone, Calhoun, Clay, Doddridge, Gilmer, Greenbrier, Harrison, Lewis, Roane, Ritchie, Tyler, Upshur, Wetzel, and Wirt counties.

BRIGHT YELLOW is the prevailing quality in Fayette, Raleigh, Monroe, Mercer, and Summers.

WHITE BURLEY.—This new variety has no fixed locality, but is principally grown in the Ohio river counties.

The tobacco produced in Kanawha, Putnam, and Mason counties is darker, heavier, and richer than the same type grown along the Ohio river, and might properly be classed separately. It more nearly resembles the dark Shipping of eastern Virginia than the product of the Ohio valley, which latter more nearly resembles the dark tobacco of eastern Ohio. This difference is partly the result of soil influences and partly the result of management. In the Kanawha district the leaves are cured on the stalks; in the Ohio river counties the bulk of the product is pulled from the stalks, and only the leaves are housed. The Kanawha tobacco is riper when cut, and is tougher and more waxy; the product of the river counties is thinner, more tender, and brighter in color. There are usually four grades of the dark tobacco: long leaf, short leaf, ground leaves, and tips; but in the best-assorted crops there are five grades, two of lugs, one of tips, and two of leaf.

Of the red and spangled tobacco there are numerous grades, there being several shades of red, running to black; several varieties of spangled, from a bright mottled yellow to a dark mahogany; colored sorts, from orange to cherry red; and some of a smooth yellow. All these are classed together, for convenience of illustration, and because they are all produced more or less in the same area, and sometimes on the same farm. Peculiarities of soil, different varieties, and varying modes of handling, curing, and management, produce the different colors.

Of the five counties classed in the Bright Yellow district, only one (Fayette) makes the production of this quality a specialty.

In several counties in the Red and Spangled district very good brights are produced by planters who have discarded the old plan of curing with open wood fires and have substituted therefor charcoal or flues. In Fayette county the production of fine yellow tobacco, begun twenty-five years ago by an immigrant from Amherst county, Virginia, has rapidly extended, the country from Cañon Hill to Oak Hill presenting a scene of thrift, enterprise, and prosperity—a suggestive picture of what skill and energy can accomplish in a rugged, and in many respects uninviting, region.

GEOLOGY AND SOILS.

West Virginia is in the Carboniferous Limestone and Great Coal groups, the counties of Mercer, Monroe, Summers, and Greenbrier being principally in the Carboniferous Limestone, while all the other tobacco counties are in the Great Coal group.

The soils of the Carboniferous Limestone group are varied: Limestones, sandstones, and slates are the prevailing rocks. The limestones are magnesian, siliceous, and carbonate. The sandstones and slates indicate the poorer soils.

The soils of the Great Coal group, except the alluvials on the rivers and creeks, are apparently very much alike, but are really unlike in constitution and character. Those of a dark color, approaching to red, where reddish sandstones occur, are generally the most fertile; the slaty and shaly mountain slopes the poorest; but with proper skill and management these latter soils produce the finest tobacco. The alluvials of the Great Kanawha and other rivers are generally dark, sandy loams, and are the most fertile of all. These produce the best shipping and Burley tobacco, those with most clay being best adapted for the first, and the more sandy soils for the latter.

The limestone soils are easy of tillage, retentive, not easily washed, and are susceptible of great improvement, and offer suitable lands for the production of the Burley type.

The soils of the Coal group, and those of the lower shale and sandstone formation, are not considered easy of tillage; for, aside from their closeness or adhesiveness, they are generally so hilly and steep as to make cultivation difficult and laborious to man and beast. They are not easily washed, except on some of the sandy ridges. The subsoil is generally porous, seldom soggy, and crops are rarely injured by excess of water in the soil, the natural drainage being perfect in much of the cultivated area. There are extensive areas of fresh lands awaiting development, and, from present indications, tobacco will be the first crop to utilize them.

CLIMATE.

Owing to the rugged and elevated character of three-fourths of the territory of West Virginia, the temperature, like that of all mountain regions, is variable, the isothermal lines making sharp and crooked curves, to correspond with elevation.

The *Statistical Atlas of the United States*, temperature chart, Plate VII, indicates that while a narrow belt of the most elevated portion of the state is in the zone of 48° to 52°, yet the main area is in the zone of 52° to 56°, and while there occur occasional extremes of low temperature, there are seldom seasons of extreme heat. The days are often hot in summer, but the nights are cool, affording just the most needful conditions to the tobacco-plant.

Early and late frosts, which may damage the young plants in the seed-bed or nip them before harvest in the fall, are most to be guarded against. The tobacco-plant, when quite young, will bear a low temperature—even

below the freezing point—and live. Sheltered spots on southern slopes and hillsides and hot-beds will furnish the needed supply of plants, and by topping low they may ripen and be cut before the usual time for frost. Fertilizers expedite growth and maturity.

The average annual rainfall along the central zone is about 40 inches, and, as usually distributed over the tobacco belt, is admirably suited to this crop: gentle in spring, more in the growing season of early summer, and less in August and September, allowing the plant to ripen when excessive rains would do harm.

The lands everywhere in this region are richer than they seem, and produce crops beyond the expectation of those inexperienced in their capabilities. Green fields may be seen upon steep declivities and on rugged escarpments, even to the very tops of the mountains, proving that the soil on these apparently unfavorable and almost inaccessible localities may be made to yield abundantly.

West Virginia enjoys comparative immunity from storms, and the consequent damage therefrom, and the tobacco crops are rarely injured in the sheltered positions of the larger number of the fields, being protected by woods and hills from winds or driving rain-storms.

VARIETIES OF TOBACCO.

In the Kanawha valley the varieties mostly grown are Orinoco, Frederick, Pryor, Brittle Stem (Little Orinoco of Virginia), White Stem, and White Burley, one or the other being a favorite in different neighborhoods, according to the preference of the planters, or because of supposed adaptation to certain soils. The Burley has been recently introduced, and some farmers are pleased with it, while others are not. This variety is gradually growing into favor wherever the soil is suited to its proper development, and bids fair to succeed in the valley of the Kanawha, as well as in the Ohio river counties, where the soil is mellow and rich. Along the Ohio river the varieties in use are much the same as those grown in middle Virginia, with a sprinkling of Kentucky and Ohio names. Not much attention seems to be given to the selection of varieties, nor is there much care taken to keep desirable ones pure. As many as three varieties are sometimes seen growing in the same field promiscuously, showing that the planter had sown mixed seed, or had drawn his plants carelessly from beds sown with different varieties. In the Red and Spangled district there seem to be no fixed varieties. In Tyler county the Orinocos, White Stem, and Maryland Thickset are found. The "Yellow Spangled" is only another name for the Orinoco, and its product sells well—next in price to the bright yellow and a first-class Burley. The Burley, however, has not been successfully grown on the gray uplands of this state, such as produce a fine spangled or bright yellow leaf.

On old, rich, or highly-manured lands the growth is rank and the stalks and stems large, the leaves coarse, brittle, and full of sap when ripe, and consequently cure dark in color. On raw or fresh land, or on old land of medium fertility without manure, the plants are smaller, the texture of the leaves finer, the leaves ripen with less sap and of a yellower color on the hill, and cure brighter and with less body. Fresh land produces the finest tobacco, and that best suited for manufacturing purposes.

During the past ten years there has been a marked change from the dark to the colored types, the latter, bringing better prices, having increased in production, while the former has diminished. This is especially the case in the section south of the Chesapeake and Ohio railway, where most of the crops are now cured with charcoal, a few planters using flues, and the quality has greatly improved, due mainly to the better methods of curing. The same may be said of the counties growing the White Burley. The product is improved by the introduction of this variety, and the mode of curing it by air, without fire, is the cheapest of all. Where the crops are cured with open wood fires, there has been no improvement in quality, and lower prices have lessened the product.

In Mercer, Monroe, Fayette, and Raleigh counties the improvement in product, consequent upon the better modes of curing, has been more than a hundred per cent.

THE USE OF FERTILIZERS AND PRESERVATION OF TOBACCO SOILS.

Neither commercial fertilizers nor domestic manures are much used on the tobacco crop of this state, except in the Yellow district. In this district commercial manures have proved of great benefit, and their use is increasing. These are usually applied in the hill, as this is found to produce the greatest good at the least cost. These fertilizers increase the yield, hasten ripening, and improve the color; but opinions differ here, as elsewhere, whether or not there is any improvement in quality, different effects of fertilizers upon the quality of the cured product being attributed to the differing character of soils and the quantities of fertilizers used. Heavy applications contribute to the production of large, coarse leaves, particularly on some soils, and the product is unfitted for the finest types; but where applied in limited quantity, and on suitable soils, early growth and maturity without excessive stimulation is the result, and the product is increased without injury to the quality.

Usually two, and sometimes three, crops of tobacco are grown on newly cleared lands. The second crop is, in most instances, the best—larger in yield and of about the same quality as the first; and the third, when the land is not too poor, pays about as well as the first. Planted upon the same land for a series of years, without the application of manures in sufficient quantity, there is a heavy decrease of yield and a very marked falling off in

quality, until the product ceases to be desirable to purchasers or profitable to the grower. In some counties there has been a decided increase in the product, the result of better cultivation, as well as of the extended use of fertilizers; in others, a decrease must be noted, due to exhaustion of the soils, inferior cultivation, and the neglect of manures.

On many farms, tobacco occupies the same fields for only two years after clearing, the land being then devoted to other uses, and new clearings being made for tobacco. No system of rotation, in connection with green-manuring or other fertilizing, for soil recuperation, is generally adopted; but a few of the more careful planters are beginning to follow tobacco with grass, to remain some years.

SEED-BEDS.

The general practice is to burn from January to March, and to sow the seed as soon as the beds are prepared.

PREPARATION OF TOBACCO LAND AND CULTIVATION.

New land is coltered or plowed, harrowed or shoveled over, marked, and hilled, the implements used varying with the condition of the "clearing"; but old land is broken usually with a two-horse turn-plow, harrowed or shoveled, furrowed off and hilled. The preparation is various—thorough by some; by the greater number, imperfect and in a slovenly manner.

The usual distance apart for the plants is 3 by 3 feet; for the larger varieties, upon stronger soils, 3½ feet each way. Planting is begun about the middle of May and completed by the first of July. No system of cultivation is adopted, even in any given neighborhood. Every farmer follows his own mode, as inclination or necessity prompts.

TOPPING AND PRIMING TOBACCO.

Topping commences as soon as the plants are large enough, some farmers waiting for the appearance of the "buttons", and others topping as soon as eight or ten leaves of good size are formed, the dark grades being topped to eight or ten leaves, the yellow to ten or twelve, and the Burley to twelve or sixteen.

In some localities all the tobacco is primed; in others no priming is done; and there is a growing disposition not to prime, especially where the Burley is grown.

CUTTING, HOUSING, AND CURING OF TOBACCO.

Most planters in West Virginia prefer to cut tobacco when fully ripe, so that the plants are not considered ready for harvest until thirty or forty days after topping. If, because of late planting, frosts threaten before the crop is ripe, the tobacco is cut before being fully matured. In some sections of the state the leaves are stripped from the stalk and are strung upon wires or twine to be cured; but for much the larger portion of the crop the stalks are split and the plants are straddled upon sticks, six to eight and sometimes eight to ten plants to the stick, according to size and type—a less number for the Burley and yellow, and more for the dark grades.

Nearly all the tobacco-houses are built of logs, are usually 20 feet square, with from four to five tiers in the body of the barn, and are covered with boards or shingles, the spaces between the logs being usually chinked and daubed with mud. The average capacity of these houses is from 4,000 to 6,000 plants. In the Yellow district the sticks of hung tobacco are placed well apart on the tiers. Where the curing is done with open wood fires the sticks can be placed closer together. The cost of an ordinary log barn, 20 feet square, 16 to 20 feet high, and covered with boards, is from $40 to $70.

The usual time of cutting is from September 1 to October 1. A few farmers scaffold tobacco, but the majority house it as soon as it is cut. A considerable part of the product of this state is cured with open wood fires—a method which makes a low-priced tobacco; but no tobacco grown in the state has sufficient richness and body to be properly cured in this way.

The Burley is air-cured, makes a salable product, and is growing in favor with manufacturers. This variety, as indeed all others intended for air-curing, should be cut dry, and either placed upon scaffolds or hung well apart in the house, not crowded upon the sticks nor on the tiers; and especial care is needed to maintain a free circulation of air to prevent pole-sweat, or house-burn as it is sometimes called. Some planters ruined their crops of Burley by failing to give room enough and by firing with wood. In Fayette and in Raleigh charcoal is principally used in curing brights, and the method of yellowing, fixing the color, and drying out the tobacco is substantially the same as practiced in Virginia and North Carolina. Flues are being introduced, to take the place of coal, and, where properly constructed, give satisfaction.

Hall's method of curing bright yellow, as practiced in Mercer county, is as follows: After housing, raise the heat to 100° F., to wilt the tobacco; then let it cool down. The following day raise the heat to 90° and cool down as before; repeat this every six hours until the tobacco is half yellowed; then raise the heat slowly to 120°, to dry the leaf. After the sweat is dried up raise the heat to 190°, and keep it there until stems and stalks are fully cured. Very fine tobacco is cured by this process. The directions above given can serve only as a guide, the condition of the tobacco when housed, the character of the house, the season, and the weather being all so variable as to make

it impossible to lay down fixed rules for the curing of any desired color or quality. Skill is the reward of practice and close observation, and a certain amount of technical skill is absolutely necessary to success in curing fine tobacco of any type.

Some persons fix the color by burning sulphur, bran, and alum under the tobacco at what is considered the proper time; but this is of doubtful propriety or advantage. The heat, if properly regulated, will fix the color, and there is no disagreeable flavor, such as is often imparted by the fumes of sulphur, etc.

In the Yellow district it is the common practice to bulk down tobacco as soon as it is thoroughly cured, and some crowd the sticks together in the barn to preserve the color. In the Dark district it is left to hang as it was cured until a stripping season comes, when it is taken down, stripped, assorted, and tied in bundles or hands.

Very little damage to tobacco while hanging in the barns is reported. Mold sometimes injures air-cured tobacco, caused by long continued damp, warm weather, and sometimes late-cut tobacco is damaged by freezing in the barns before the sap is thoroughly dried out.

After being stripped, the tobacco is either bulked down, to be sold in winter order to country dealers, or is hung up, to be properly ordered for bulking or prizing. If bulked, it is permitted to remain from thirty to forty-five days to sweeten before being prized.

Most planters sell in prized packages; some sell loose to dealers. The wooden lever is generally used for prizing, but a few screws are found here and there. Ohio river planters ship to Cincinnati, all the Burley going there. Farmers within reach of the Baltimore and Ohio railway ship to Baltimore, and those near the line of the Chesapeake and Ohio find a market in Richmond, Virginia. The usual time of selling is from May till August, the larger part of the crop being marketed in June and July. The hogsheads of dark leaf vary in weight from 600 to 800 pounds for leaf to 1,000 and 1,400 pounds for seconds and lugs. Brights are usually packed in tierces weighing from 200 to 500 pounds.

DISEASES OF TOBACCO.

Except on the Kanawha and the Ohio rivers, where red-fire, speck, and hollow-stalk sometimes prevail to a limited extent, the tobacco of West Virginia is remarkably free from disease, and many of the interior counties report no disease.

COST OF RAISING TOBACCO, ETC.

In the region producing the dark types the price of the best tobacco lands varies from $15 to $30 per acre, and these produce, without manures, from 800 to 1,000 pounds of tobacco per acre. Inferior soils, producing from 500 to 600 pounds, are worth from $8 to $12 per acre. In the Yellow district, the best lands, producing from 600 to 900 pounds per acre, are worth about $10, inferior soils, producing from 500 to 700 pounds, being valued at from $4 to $7 per acre.

The approximate cost of raising tobacco in the Dark and Burley districts is estimated at $5 25 per hundred pounds; in the Yellow district, $7 75. These are approximations only, not one farmer in a hundred being able to make an accurate statement of the cost of production.

The average wages paid for field-hands is: for men, 50 cents per day, $10 per month, and from $100 to $120 per year, with board, and sometimes houses for their families, tobacco laborers being paid as common field-hands. Skilled curers and packers command better wages, proportioned to their special abilities.

Land is rarely rented by the acre. Where worked on shares, the cropper gets two-thirds and the landlord, one-third—the latter furnishing only the land, barn, and barn fixtures. Where the land is to be newly cleared, the cropper gets a larger percentage of the product.

The number of acres planted to the hand varies widely, according to locality and peculiar circumstances. Where tobacco is one of several crops grown upon the farm, from 3 to 4 acres are planted for each full hand; where this is the main crop, or made a specialty, 5 to 6 acres per hand is not accounted too much. Extra labor must be employed, however, at certain times; for no one man can worm, sucker, cut, house, and cure 6 acres of tobacco without help.

Co-operative labor to a certain extent can produce tobacco more cheaply, and doubtless of better quality, than individual effort upon a limited area. When the number of workers is too small the work is performed at a disadvantage, and the planter is forced to rely upon assistance, which is not always obtained when needed, and not always skillful or reliable. On the other hand, when the working force is a large one, only the most careful and energetic supervision, with judicious management, will secure profitable results.

INSECT ENEMIES OF TOBACCO.

In West Virginia little damage by the cut-worm is reported, which is accounted for by the fact that most of the land cropped in tobacco is newly cleared.

The tobacco of the Ohio river counties bears evidence of a multiplicity of horn-worms, but in the interior counties they are not so numerous. The injury to the product along the Ohio, including the cost of hunting and killing the worms, is estimated at 15 per cent. of the entire crop.